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OVERSIGHT OF RIGHT-TO-KNOW POLLUTION DATA

HEARING

BEFORE THE

SUBCOMMITTEE ON
SUPERFUND, OCEAN, AND WATER PROTECTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

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OVERSIGHT HEARING ON RIGHT TO KNOW POLLUTION DATA

WEDNESDAY, MAY 10, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, OCEAN,
AND WATER PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room SD-406, Dirksen Senate Office Building, Hon. Frank R. Lautenberg (chairman of the subcommittee) presiding.

Present: Senators Lautenberg, Durenberger, and Chafee.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. We will call the Subcommittee on Superfund, Ocean, and Water Protection to order.

Today the subcommittee is going to examine some right-to-know pollution data. This data was collected under the Federal right-to-know program, and it has given us the first comprehensive picture of pollution across the country.

When I authored the right-to-know law in 1986, I had hope that it would provide EPA and the country with a mandate for action. It has. EPA reported air releases of about 2.7 billion pounds. Forty-two million pounds of these toxics were emitted in my State of New Jersey. Water releases across the country were about 9.7 billion pounds, with about 53 million of these in New Jersey. Releases into the land were about 2.5 billion pounds, with New Jersey reporting 5.3 million of those.

Pollution is pouring into our water, land, and air, and I think everybody knows that we are not doing enough to stop it.

As coauthor with Senator Durenberger of a bill to control air toxic emissions, I believe that a tougher Clean Air Act is a part of the answer. In addition, I believe the most far-reaching approach looks at all kinds of pollution, and it looks like the best way to approach it is to stop it from being created at the source.

Now, it is time for this country to move forward with a comprehensive program of pollution prevention, and to do this a number of steps have to be taken. First, we must begin to provide sufficient funds for EPA's pollution prevention efforts. The President's fiscal year 1990 EPA budget includes only about $16 million for pollution prevention. That is about three-tenths of 1 percent of the President's EPA budget.

Secondly, EPA has got to provide substantially higher Federal assistance to States to help them establish technical assistance programs for businesses and for pollution prevention training.

And, thirdly, we need a way to get the word out on source reduction technologies. To address this, EPA should move forward with current efforts to establish a publicly available data base on source reduction technologies. This clearinghouse has to have adequate funding for now, and it should be maintained in future years.

Fourth, companies already reporting emissions under the right-to-know law should be required to report to EPA on source reduction data and source reduction practices. These reports should be publicly available. And EPA ought to analyze such data to determine national pollution prevention strategies.

Lastly, EPA should have a program of making national awards to recognize those who make the outstanding effort on reducing the generation of pollution at its source, and that way we will call attention to those who have achieved the most and can set the right kind of example for others.

I hope to explore the question of pollution prevention today, particularly its relation to the right-to-know program. We have representatives from industry, the environmental community, OTA, and EPA, and we expect to get a broad look at this important issue.

I thank all of our witnesses for their participation and look forward to hearing their views.

I would call the first panel, Ms. Oldenburg and Dr. Jerry Poje. Come to the table, please.

While they are coming to the table, I would take this minute to acknowledge the receipt of a statement from the Majority Leader, Senator Mitchell, and, without objection, will include it in the record. Also, Senator Chafee has a statement and that too will be made part of the record. He indicated that he would try to attend the hearing if possible.

[The statements referred to follow:]

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Good morning, Mr. Chairman, ladies and gentlemen.

I want to commend Senator Lautenberg for scheduling this hearing to review the new data on the range of toxic contaminants released into the environment. As a primary author of the Right to Know provisions of the Superfund law, he is largely responsible for the development of this important toxic chemical data.

Like many of my colleagues, I was shocked to hear of the magnitude of the discharges of toxic chemicals to our air, land and water. The sheer volume of these contaminants is remarkable—2.5 billion pounds of pollutants to land; 2.7 billion pounds to air, and almost 10 billion pounds to water. This pollution loading is an insult to the environment and must be reduced.

I was especially concerned by data showing high levels of discharges in my home State of Maine. Of greatest concern is the volume of discharges to Maine waters. Inventory data indicates that almost 200 million pounds of pollutants are discharged to Maine waters each year. This pollution loading is the 12th highest in the nation, and is the highest of any State in New England.

While we have made substantial progress in reducing pollution loadings to Maine waters in recent years, this new data is further evidence of the need to continue firm implementation of pollution control programs.

At the national level, two general conclusions seem clear.

First, we must redouble our efforts to assure that we have the best possible controls over pollution discharges. That means we must move ahead with the new controls over air toxics in the legislation recently introduced. We must review pro-

grams for controlling discharges to land and surface water. And, we must continue our efforts to develop a comprehensive program for control of ground water contamination.

Second, we must redouble our efforts to minimize the amounts of pollutants generated in the first place and prevent pollution problems whenever possible. We have seen time and again that the costs to both government and industry of cleaning up a pollution problem are far greater than the costs of preventing the problem in the first place. The data from the Toxic Release Inventory confirms this basic principle for us once again.

I look forward to working with you, Mr. Chairman, in further review of this important information and in developing measures to reduce the level of toxic discharges to the environment.

Thank you.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Thank you, Mr. Chairman. I want to join with others in commending you for holding this hearing.

Our witnesses this morning will rightly conclude that the message from this data is that new pollution prevention strategies are needed. After nearly 20 years under the Clean Air Act, releases of toxics to the air are more than 2.7 billion pounds. Probably much more, since the firms required to report data under section 313 are only a small slice of our industrial sector. And toxics discharged to surface waters are 9.7 billion pounds despite the tough cleanup requirements in the Clean Water Act.

Next week Senator Baucus and I will be introducing bills to reauthorize RCRA. These bills will put the emphasis on pollution prevention. In 1984 the theme of the RCRA reauthorization was treatment before land disposal. This time waste reduction and recycling will be the central focus of the legislation.

I look forward to working with Senator Baucus and you, Mr. Chairman, as we move that RCRA legislation. The Toxics Release Inventory makes it clear that this problem is urgent. Having this data will be of great help to the Congress in designing environmental legislation. I trust it will also be of value at the local level for communities that wish to take action to reduce the risks of exposure to toxic materials in their environment.

Senator LAUTENBERG. This is an oversight hearing, and therefore we are going to ask you to raise your hand and take the oath.

[Witnesses sworn.]

Senator LAUTENBERG. First we will hear from Ms. Oldenburg. We would ask you please to keep your testimony limited as much as possible to 5 minutes. We have a clock here that will remind you. We will not gavel you down, but we will take the full statement for the record and would ask that your summary try to cover as much as you can in 5 minutes, please.

STATEMENT OF KIRSTEN OLDENBURG, DEPUTY DIRECTOR, HAZARDOUS WASTE AND WASTE REDUCTION PROJECTS, OFFICE OF TECHNOLOGY ASSESSMENT

Ms. OLDENBURG. Thank you, Mr. Chairman, for inviting OTA to be here today. Our testimony is on the importance of the toxic release information data in relation to pollution prevention.

I just want to mention before I get started that Joel Hirschhorn, Senior Associate at OTA and director of several projects on hazardous waste, waste reduction, and Superfund, did prepare the formal statement. However, he could not be here to present it, and I am here instead. I have been working with Dr. Hirschhorn for a number of years on those same issues and was the assistant project director on our two pollution prevention reports, "Serious Reduction of Hazardous Waste" and "From Pollution to Prevention."

There are four points in our formal testimony that I would like to just briefly summarize for you now.

First, the enormous amount of releases reported to the public a few weeks ago, the 20 billion pounds of toxic chemicals, we feel is just the tip of the toxic tower. We estimate that as many as 400 billion pounds, or 200 million tons, of these substances in wastes, pollutants, and discharges are probably being generated by American industry, and the public is subject to even more if you consider non-point sources such as automobiles.

Now, while it is true that these releases do not tell the whole story on exposures, risks, health, and environmental effects, even after taking account of dispersion and dilution of chemicals, effective management controls, and natural chemical degradation, there surely is still cause for worry about dangerous risks, especially given the scientific uncertainties about toxics.

While the public sometimes seems to overreact to raw data like TRI, I think it is important to remember that the public does have an intuitive grasp of the significance of the cumulative exposures to many different toxic chemicals from many different sources coming at them from many directions.

I think the real significance of the data, despite the uncertainties and because of the uncertainties, is that the data does show that after 20 years of ever-increasing environmental regulations, based on pollution control, we have still not been able to prevent an enormous amount of these chemicals from entering the environment.

The second point I wanted to make is that the toxic release data, perhaps more than any other information coming from the Federal Government, is an environmental incentive for pollution prevention; that is, it is an incentive, as you say, not to generate waste in the first place.

The massive material is also a waste in an economic sense. A rough calculation of the cost of the raw materials, energy, and labor to ultimately produce this waste, and the cost of controlling it after it has been produced, and the regulatory systems to deal with it may amount to some $100 billion per year. Thus, the data is and it should be a national economic incentive for pollution prevention as well as an environmental incentive.

Our third point is that an assumption should not be made that the toxic release information or knowledge of the aggregate economic costs of pollution control will, by themselves, be sufficient incentives for pollution prevention for all firms in the Nation. The response for many will probably be traditional calls to regulate and control more substances rather than prevent them from being produced in the first place.

Part of this reason is that although there has been some very good progress in the last few years in bringing pollution prevention to a much higher level of importance in the public and the private sectors, the Nation still lacks a clear high-priority commitment to pollution prevention backed up by strong government policy, institutional commitment, and effective long-term funding.

Lastly, I would just like to say that OTA's work on obstacles to industrial waste reduction and public policy options has stressed that a strong Federal pollution prevention program does not have to rely on traditional prescriptive regulatory tools.

It can instead be based on three key leadership efforts: first, using electronic data, electronic technology, to effectively collect, analyze, and transfer information to industry and government; second, funding to State and local technical assistance programs, because they are the people who are best able to deal with local industries to help them overcome their particular obstacles to waste reduction; and, three, provide a national policy framework that helps everyone understand what counts as pollution prevention, how to measure its costs, benefits, and progress, and how current government regulatory programs and information collection systems such as TRI can be used to assist in prevention efforts.

That is the end of my summary, and I will be glad to answer any questions that you might have.

Senator LAUTENBERG. Thank you very much.

Now, Dr. Poje.

STATEMENT OF GERALD V. POJE, ENVIRONMENTAL TOXICOLOGIST, NATIONAL WILDLIFE FEDERATION

Mr. POJE. Thank you very much, Mr. Chairman.

I am the environmental toxicologist for the Environmental Quality Division at the National Wildlife Federation.

I want to thank the Chair, members of the subcommittee and the full committee for the opportunity to provide written and oral testimony on the recently released data collected pursuant to section 313 of title III and the need for a national pollution prevention program.

The National Wildlife Federation lobbied intensely for the passage of the Superfund Amendments and Reauthorization Act, and for the past 2 years we have worked with a number of members of the environmental community to implement the law fully.

We have published a guide on emergency planning called "Reducing the Risk of Chemical Disaster," and we worked closely with a coalition of environmental groups called the Working Group on Community Right to Know, which publishes a newsletter for activists around the country involved in this issue of the Toxics Release Inventory data and emergency planning.

The National Wildlife Federation strongly supports the establishment of a national industrial pollution prevention policy to guide EPA and to promote prevention activities at the State and local level. Aggressive source reduction programs are essential for any progress in environmental protection.

We commend the chairman and members of the subcommittee for their strong support in passing title III, and we thank you also for holding this hearing.

In summary, our statements echo the statements that have just been given. Mismanagement of toxic chemicals and hazardous wastes threatens America's environmental health and our economic security. The amount of chemical emissions and waste production is truly alarming and is increasing.

The existing and potential impacts of toxic chemicals on the environment and public health are monumental. All environmental media are affected, and for some persistent hazardous chemicals, the effects may be accumulating.

Finally, the economic impacts of inefficient chemical management are consuming the scarce industrial and governmental resources which would otherwise be devoted toward improving industrial competitiveness and resolving other pressing national issues.

EPA recently released the 1987 data set for the Toxics Release Inventory. The summary data has been described by the Senator. We issued a report about a month ago called "The Danger Downwind," whereby we called attention to some of the preliminary data that was made available through EPA on air toxic emissions into the States. In only one year, 2.7 billion pounds of air toxics have been emitted into the United States.

Currently, though, the United States annually produces and disposes of more than two tons of hazardous wastes for each man, woman, and child. According to EPA's data, in 1985, 275 million metric tons of hazardous waste were managed by more than 3,000 facilities.

Waste generators also produce over 300 million metric tons of RCRA-exempt waste which is regulated by the Clean Water Act, and in addition, an estimated 20 million to 35 million metric tons of hazardous wastes are disposed of in deep-well injection under the Safe Drinking Water Act.

Based upon this alarming set of data about the pollution pervasive in our society, we are recommending the following seven points: We need to promote source reduction. Pollution prevention is the key to solving the toxic threat, and pollution prevention means source reduction.

Number two, we think that we should be establishing a national reduction goal. Federal source reduction policy designed to achieve actual reductions in the generation of toxic emissions and hazardous wastes should state a national goal for the amount to be released each year.

Third, we believe that it should be essential to tie environmental permitting to the reduction efforts. Industrial performance should be measured against the national reduction goals through comprehensive multimedia waste reduction permit certifications. We believe that putative permittees should be forced to confront the issue of how much they are achieving in the national goal.

Fourth, we believe that new research must be conducted and new information gathered. Claimed waste reduction by permittees should be substantiated through the submission of detailed product-specific and process-specific information.

Fifth, we need to provide technical assistance grants to States and to fund EPA appropriately. Pollution prevention programs should emphasize the importance of the States and the local level in monitoring these activities.

Sixth, we believe that we must involve the public in source reduction efforts. Pollution prevention is a public responsibility. The permit information must be appended to an accessible data base such as the section 313 computerized data base which forms the basis for much of our concern over the last few months as that data became available.

And then, finally, we believe that EPA's infrastructure must change. EPA must elevate prevention to a prominent role within the agency's programs, and a high-level independent Office of Pol-

lution Prevention directly answerable to the EPA Administrator must be authorized to identify and require reduction practices.

Thank you very much. I would be happy to answer any of your questions.

Senator LAUTENBERG. Thank you very much.

I would like to ask a couple of questions, and these can be answered by either one of you. I will address it to one, and if the other person has something he or she would like to add, he or she is welcome to do so.

Dr. Poje, you talked about what EPA must do. You described an infrastructure change. We obviously can do several things to improve our monitoring, our enforcement, our emission objectives.

I want to ask you a couple of questions about such things as EPA's current pollution prevention budget. I discussed that briefly. How does that strike you in terms of either what the ultimate objective might be or whether it is there relative to other pollution or environmental problems?

Mr. POJE. I certainly would echo your call that this is a rather meager step in this approach. We bemoan the fact that the administration has not sought to act upon the rhetoric of pollution prevention and devoted an appropriate budget amount to this process.

It is very important that EPA be given the money to be able to hire the appropriate technical staff, to oversee the implementation of a program that is far more comprehensive and multimedia in its impact than any program that has been established at the agency to date.

Senator LAUTENBERG. Ms. Oldenburg, we probably would all agree on this one.

Ms. OLDENBURG. I certainly would, and I would just like to maybe point out that in our Serious Reduction report of 1986, we suggested that the spending should be on the level of about $50 million a year and that certainly the major portion of that money should be directed to States for their technical assistance programs, because that is the important thing, that you get the information out to the industry and each State.

So compared with what EPA is suggesting, $16 million, it is a good number but not maybe good enough. I would also point out that certainly $16 million is a lot more than when we did our report in 1986 in terms of what was being spent. So we are getting there, but we really have not gotten to a minimum level yet.

Senator LAUTENBERG. Do you have any views on what kinds of programs, what size program, what do we have to do to provide adequate technical assistance grants to States to induce them to get involved in pollution prevention?

Ms. OLDENBURG. Well, I would say that certainly—it depends, of course, on the size of the State and their industry, but we know that in many——

Senator LAUTENBERG. A State like New Jersey, for instance.

Ms. OLDENBURG. A State like New Jersey would have to certainly spend, I don't know, several million dollars a year minimum. Most States we know have maybe one person, one person per State, that is dealing with this issue, and compared to the numbers of people that they have on the pollution control side, that just will not get us anywhere very quickly.

Mr. POJE. Senator, if I can just add in, recently I was invited by the State Department of Environmental Quality in Louisiana to address their first hazardous waste reduction conference. They had been successful in an application grant to EPA for matching funds, and they operate off a State law that also builds a partnership of States with the Federal agencies in assuring that these programs go forward.

I must say that they are struggling now with the manpower and the staffing to utilize the section 313 data for establishing their priorities. They want to focus on those industries that can give them the biggest bang for their buck. They want to know which ones they are going to be able to compare that are operating in their State emitting chemicals such as vinyl chloride and benzene, how they might compare to the State of New Jersey.

This is an important and revolutionary approach to information management that we are just starting to enter into the age of.

Senator LAUTENBERG. What do you think of EPA's current effort to establish a pollution prevention clearinghouse? Is there anything there that gives us encouragement that this job is going to get done?

Ms. OLDENBURG. I would make a comment that from what I know of it from having discussions when they were planning the clearinghouse was that it was sort of a core dump of information, and that is the easiest way to get started, of course, to collect as much information as you can and not sort through it for its validity or success or failure, kind of, and just to put it in and have it available. That is sort of one level, one type of clearinghouse.

I think the kind of information transfer we are looking for is more on the order of and takes a larger effort, more people to do it, and that means sorting through the information first before you put it into the data base to make sure that it is appropriate, that it really has been effective.

I think it is very important, as I mentioned in my testimony, that a data base of that kind also points out failures that have occurred. We rarely hear about failures in this area, and we really need to know about them so that people do not go through it and do it again, that we keep it going in a positive direction.

Senator LAUTENBERG. We talked about what States might do. What can industry do in short form to improve their pollution reduction activities?

Mr. POJE. Senator, if I may give answer to that, it is not an exact poll of all industries, but I will say that on June 30 of 1988, on the eve of the first submission of the Toxics Release Inventory data, the chief executive officer, Richard Mahoney, of the Monsanto Corporation made the rather amazing announcement that in 4 years they would reduce their emissions of toxic chemicals to the air worldwide by 90 percent and, after that date, would strive toward achieving a zero emission.

Now, we believe that this is an important statement that needs to be followed up, and now that we have started ourselves on a program of annual data reporting, we need to go and do the more detailed work to assess how those reductions in emissions are actually going to be achieved and to milk that information for the most

important source reduction efforts in reducing those emissions to the environment.

So the environmental community is rather excited about this, and we believe that this is acting right now—I have traveled over the country in the last several months where people are asking the same kinds of challenging questions to the industrial facilities in their area. The question is no longer, Is that chemical going to hurt me? but, How are you going to reduce it?

That seems to have been the missing ingredient from EPA's program in dealing with the 313 inventory. We received quite a bit of information about risk assessment, risk communication, risk ranking, but really, the question that the public seems to be asking is, Risk reduction, when will that occur?

Senator LAUTENBERG. As you know, we are going to have a panel of people from industry here, and I would have to tell you that in my office we get lots of inquiries from industry. I see a serious interest by companies wanting to participate.

Dr. Poje, in a hearing that you testified in last May, EPA estimated that there would be 30,000 facilities covered by the right-to-know law. EPA received reports from about 17,000 or 17,500 facilities. Do you think that EPA's estimates were wrong in the first place, or is compliance weak or enforcement missing? Do you have a view on that?

Mr. POJE. Well, I would certainly argue that enforcement has not received as much attention as it should have and that the issue of compliance is really a very burdensome one for us to consider as we make mention that we received over 20 billion pounds of toxic chemicals in 1987.

If we would have received reports from 30,000 industries and 300,000 reports, we would have certainly seen those numbers jump. Let's remember, though, that the section 313 reporting requirements do not capture all industries, they do not capture Federal facilities, and they certainly do not capture all chemicals.

Now, in fiscal year 1988, EPA instituted enforcement actions against a number of facilities which did not report 313 forms. However, the first group of notices of non-compliance totaled only 553. This went out in September. Since September, an additional 1,070 facilities have been issued notices of non-compliance. Last December, EPA issued civil complaints to 25 companies that failed to report their toxic release chemical information.

It is our belief that there are far more fish to be caught in that sea of non-compliance with the 313 requirements, and in fact at a meeting that I attended in Michigan not more than 2 weeks ago, the program officer from the Region V district of EPA made the startling announcement that the largest violation was caught based upon a tip from citizens that the Inland Steel Company had not reported its Toxic Release Inventory information.

Now, we believe that this speaks to an important role for the citizens, but it should not diminish the lack of activity and endeavor by the Federal Environmental Protection Agency.

We know that the States and the local people—when you issued your report with EPA a few weeks ago, I was attending a meeting in Albuquerque of the National Association of State Title III Program Officers. At that meeting, I presented the press release that

had occurred of the 313 preliminary full data set from EPA, and they were bristling at the comment that, at the local level and at the State level, there was going to be enforcement of the 313 activities, because they have not received the kind of support and guidance in order to conduct that enforcement activity.

Senator LAUTENBERG. I am going to turn to Senator Durenberger in just one second. I wanted to ask you one last thing while we are on this subject, and that is, do you have any reason to believe that there should have been 30,000 facilities reporting? Do we have any reliable source of information?

Mr. POJE. There is quite a bit of capability for cross-checking in a number of filing systems at the State level and at the Federal level—air permits, water permits, RCRA permits—that really could form the core basis for understanding which facilities have not reported that have a high likelihood that they should report.

There is another issue, though, here in terms of enforcement and compliance, and that is the need for EPA to do on-site inspections to verify that the information that is being reported is actually accurate and comprehensive.

Senator LAUTENBERG. The question is, first, the number of facilities reporting, because I think you have to get to that, and once again, do we have any reason to believe that 30,000 is the universe?

Mr. POJE. I have no reason to believe that that is not capable of being part of the universe.

Senator LAUTENBERG. Senator Durenberger, if you have an opening statement or want to ask some questions, please proceed.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. Reading the testimony for this hearing brought to mind another hearing the committee held back in 1987 on the subject of air toxics. At that time, the hearing witnesses, representing various industries, told us it was too soon to amend section 112 of the Clean Air Act and asked us to wait until the Toxics Release Inventory was available because it would tell us what kinds of air toxic amendments to the Clean Air Act were necessary.

So we have waited, and now the data is here, and it shows that new requirements to control the release of air toxics are urgently needed.

I think everyone was surprised by the very large quantity of releases that were reported under section 313, and as some of our witnesses will point out, this is only a small portion of the total releases to the air from all sources.

Many of the witnesses this morning will focus on the need for pollution prevention strategies, and I agree that pollution prevention is the most sensitive and cost-effective means of protecting public health and the environment from exposure. But that does not mean that the Clean Air Act or the Clean Water Act are obsolescent.

These are very large releases. Many of our pollution control laws, and especially section 112 of the Clean Air Act, have failed to prevent the releases. We need amendments to the Clean Air Act

that mandate, not just encourage but mandate, reductions in the release of toxic air pollutants, and I know that is the sentiment shared by the Chair of this subcommittee.

I would say that the air toxics bill which we have introduced tries to put the emphasis on pollution prevention. In the definition of maximum achievable control technology, what we call MACT, which is the standard of control of the first phase of the air toxics bill, we include source reduction as the first option to be considered. End-of the-pipe control is also among the options. But source reduction is the first option that EPA is to look at in writing the MACT standard for each industry.

It will be interesting to see how it works. This is the first bill in the new era of pollution prevention, and it makes pollution prevention the first option in setting standards. But I have already heard some opposition to that concept from industry, so it is a test of our commitment to this new concept.

I am sure that the Congress can pass legislation authorizing waste reduction grants and technical assistance and a Pollution Prevention Office at EPA, and I support that legislation. But will we also enact pollution prevention as the first option in designing enforceable emissions limitations for air toxics? The jury is still out on that one.

So, Mr. Chairman, I look forward to working with you on these issues and want to commend you for the work you did to enact the Emergency Planning and Community Right-to-Know Act of 1986. It is that work that has brought us the inventory, and it is work that you should be rightfully proud of.

I want to ask just two questions. One is on the issue of recycling. These questions are designed to get to our approach.

Both of you, in your testimony, made the point that recycling, even recycling that is environmentally sound, is not the same thing as waste reduction or pollution prevention. My question is, why is it important to make that distinction? If a waste is recycled right back into the manufacturing process, why should that have a lesser priority than changes in the process which prevent the generation in the first place?

Ms. OLDENBURG. I can respond to that, Senator.

In our definition, when we have looked at waste reduction in process, recycling is included as an option. In other words, when it is an integral part of the process of producing a product, that you just pipe it back through and it becomes a raw material, that is what we would consider to be pollution prevention.

However, when you take that material and you transport it someplace on the other side of the plant property or to some other factory somewhere through an intermediary, and that becomes a raw material for some other process, that we do not consider pollution prevention, and it is based on environmental risk.

Once you start releasing a substance and transporting it around, workers have to handle it. You just start running into risk problems, and therefore, while we consider that kind of recycling to be the first choice in waste management, it is not pollution prevention.

Mr. POJE. If I could just echo that, the way I would approach that is, there is a definite question of risk that attends out-of-proc-

ess recycling, and again, I would say in-process recycling is part of the pollution prevention definition we would adhere to, source reduction.

But there is an additional element that I think we are all going to have to become increasingly aware of that bears on the question of indirect risk, and that is also the question of energy utilization beyond the process that we are originally generating a product material from.

So if this waste is actually transported on site and has to go through several other iterations of reformulation, reprocess, recollection, and resubstitution into the process, we have used energy at every one of those steps, and we are going to force ourselves as a society, as we come to grips with the global warming question, for every molecule of CO_2 that we are going to put out into the atmosphere, that will be an indirect risk to the environment.

I share the concern about direct risk of worker exposure and eventually outside of the plant boundaries, but I see this as a paradigm shift from the issue of source reduction. There are several other paradigm shifts that fall under the umbrella of recycling, and I harbor a great deal of fear about how that definition of recycling can be manipulated within the agency.

Senator DURENBERGER. Thank you.

You have not necessarily persuaded me, but at least you both have been very good in explaining the definition of "pollution prevention" and where recycling is in that.

My second question. Both of you have said that government incentives and encouragement for waste reduction are important, and so you are asking us to adopt a hierarchy of waste reduction, recycling, treatment, and disposal.

As I read your statements, you want us to focus on the top of that hierarchy. But it sometimes occurs to me that the best incentives for waste reduction are at the bottom of the hierarchy, not at the top. I might suggest to you that some of the incentives or the factors that are moving industry in this country toward waste reduction are the treatment and the land disposal restrictions that we built in 1984 into RCRA, and some of those are just beginning to be felt.

Industry, rather than being told at the top that you've got to do this, this, this, and that, if they are told at the end what they have to deal with and then left to figure out how to deal with that reality as you move from the top to the bottom of the hierarchy, may very well be in a better position than we to determine what is the best waste reduction strategy.

So my question is, Isn't the economic reality of the hazardous treatment requirement in RCRA at least as good or maybe more effective a tool to force waste reduction than the technical assistance that is given by some State agency with some Federal grant?

Ms. OLDENBURG. Senator, I would say that it is part of the tools that we need. However, just pressure on the back end, as we have seen it, does not necessarily convince somebody to practice pollution prevention. There is always another—cheaper, perhaps—treatment method that you can choose, and since the tradition for the last 20 years in the country is to think in those terms, usually,

when the cost of landfilling goes up, what people think of is another kind of treatment.

We came about the hierarchy because of concerns of environmental risk, and so it is based on a flow of environmental risk. Companies are going to decide what to do primarily on economic bases. So it is not necessarily true that a push at a back end creates the kind of action at the front end. I consider it to be like pushing on a string sometimes. The message just does not get all the way up to the other end of the string.

Mr. POJE. I would share the concept as well. I would not want to say that that does not have an important role in the process, but I think one of the things we are talking about here is the leadership at the Federal level and the ability to effect a cultural change in environmental management practices, in agencies, and an expectation in the public at large.

I come to grips with these kinds of questions every day in my capacity as a toxicologist for the Wildlife Federation, where I receive calls from people around the country about recycling questions, biodegradability of plastics, the recycling of oil materials. It is an effort to communicate the biggest picture to people.

I think what we are trying to argue here is that there is not enough common knowledge out there that you have these several paradigms to operate or to set targets upon, and we would want to see that we are putting our Federal efforts, at least, and encouraging at the State level an effort toward communicating the source reduction possibilities that clearly have been identified by numerous reports.

Senator DURENBERGER. Well, again I want to say I am not persuaded. I understand where you are coming from. You might think of a better analogy than pushing a string. I mean, you are talking about some pretty big economics and you are talking about some fairly large investments in research and development, and you are talking for the first time in this country about a little more precision at the waste disposal end than we have had before. Measured in billions of dollars, it is a very important question for us to think about.

I would just hope, as we go along through this process, we will all think about how people have reacted to that 1984 Act and what we know now that we did not know then, and as we try to project into the future, maybe some combination of strategies here might work a lot better. I have nothing against State grants, but I just wonder, when you are dealing with the kinds of economic investments and incentives that may be here, and with knowledge seeming to develop—every month we get a new piece of knowledge about this—that we shouldn't be thinking about turning that hierarchy around and looking at the other end of it.

I am sure we will continue the dialogue, and I appreciate the responsiveness of your questions.

Thank you very much, Mr. Chairman.

Senator LAUTENBERG. Thank you very much, Senator Durenberger.

Senator Durenberger and I have worked very closely together on environmental issues, going back to the Superfund days and the

recent release of a Superfund report. We also developed jointly a bill on pollution prevention, and one on air toxics.

Senator, you said we have gained a lot more knowledge. I think we have gained a lot more data, and it is up to us to convert it to knowledge.

Senator DURENBERGER. We will keep working on wisdom.

Senator LAUTENBERG. Since I come out of the data processing business, of course, I know that all of that does not turn to information, seriously, or knowledge.

Senator DURENBERGER. Thank you, Mr. Chairman.

Senator LAUTENBERG. Thank you very much.

Just a couple more things and we will let you go. Can you give us some perspective on the health and environmental implications of the emissions data that we got? What do you see, in fairly short form, if you will, please?

Mr. POJE. Senator, I have stated before that I believe these risks are unacceptable, and I believe they are unacceptable coming from my background as a toxicologist, because I know that we are living in ignorance about their impact.

To know the impact of these 2.7 billion pounds of toxic chemicals emitted into the air, we have to know several things. One is that we have to know the hazards of these chemicals. The hazards would be an ability to tell us what per unit of individual chemical that chemical could have as an adverse impact upon the human body and on the ecosystem.

However, for most chemicals, what we have is a great deal of information on acute toxicity and relatively little information on the chronic toxicity—what it means if you are exposed to low levels of that chemical in the air, in the water, or through the soil, what those chemicals might mean in carcinogenicity, mutagenicity, neurotoxicity, immunotoxicity.

These are emerging areas of knowledge that we are gathering quite a bit of data on in the basic medical sciences about how easy it is to perturb the human system, but we do not have that information attending each of these 320-some-odd chemicals, and therefore, I am unable as a toxicologist to give a complete bill of health for each chemical, even knowing all the hazards that attend it.

Knowing hazards is only one part of the equation. The second part, you have to know the environmental fate of those chemicals. This means you have to know how it is transported in and about the communities surrounding these industrial facilities, and you also have to know its transformation because, as we know from situations that we have seen with a number of these volatile organic chemicals, they can contribute to low-level ozone pollution problems.

The day that we released our report about the air toxic emissions, EPA simultaneously released a report documenting that more than 100 million Americans were at risk from nonattainment problems with air pollutants. Low-level breathing space ozone pollution is one of those significant problems in American communities. One of the major contributors to that is volatile organic chemicals which enhance the production of ozone at the low level.

We also have risks that are unknown right now that we are just starting to gather the information about. On the list of emissions

into the air for 1987 were 49 million pounds of CFC 113, one of those global warming gases as well as stratospheric ozone-depleting gases.

Now, these are chemicals that are not causing a direct health impact in the surrounding community, but we know we are going to live for decades with that pollution problem altering the global environmental climate. Now, I consider that to be an unacceptable risk because we do not know where those chemicals are going, and we do not know what their impact is.

John Adams, who is a consultant to CMA, had gone around the country in preparation for this issue, and he had a very interesting quote. He said:

> What bothered me most is that no one at any one of the plants or headquarters we visited was able to answer the one question that will most probably be asked most often about these emissions: What happens to them when they leave the plant?

I as a toxicologist, and EPA with their vast capabilities in understanding risks, cannot tell you what it means. We had argued with the agency to get a better definition of some of this information, to give us peak release information to go along with the annual inventory.

Knowing that 10,000 pounds of methyl ethyl ketone was released by one facility does not help us answer the question, What happens to the people who live immediately around that plant? Did that emission come in two bursts as the process was turned over, and we had two pulses of 5,000 pounds, or did it come from slow leaks around valves and flanges over the entire span of the year?

Those are very important questions to be able to answer the question of health, and it is my contention that we cannot wait until the health professionals, with their meager resources and their imprecise scientific capabilities of epidemiology, can tell us that people have been injured. We have had too many bad lessons in the past that tell us we cannot wait for that to happen. Therefore, we are arguing that pollution prevention is the smartest way for us to invest our meager resources in this particular issue.

Senator LAUTENBERG. I would ask just a last question to give us a focus, and we are going to be hearing from the EPA. What do you think they can do to improve the way EPA addresses the public's needs under the right-to-know program?

Ms. OLDENBURG. I don't think I can respond immediately to that. I think that it is a matter of making sure—I guess the next step is that the information that has been collected and now released does become available, readily available, to the public so in the communities they can use it. They can use it when they go talk to their various industries about pollution prevention. I think that is probably the most important step.

Senator LAUTENBERG. Dr. Poje?

Mr. POJE. Part of the promise of title III is section 313, this very important issue that brings us to this hearing today. One of the most revolutionary aspects of that is its ability to deliver information in a computer-accessible data base. This means that I, working at my computer terminal in my office or at home, can get information to tell me what is going on in my community. That is part of

the innovation that we are starting to see in the environmental community and the public at large.

What is going on right now is a test of the computer capabilities at the National Library of Medicine for testing this data base, for delivering it to the public. There are a number of what are called data sites being developed in the country right now whereby people are testing out the ability to get access to this data, and one of the things we are finding is that it is extremely difficult.

People with computer expertise, with knowledge of the TRI data, with knowledge about how it should look, who have done reports themselves analyzing the data, are having a tremendous amount of difficulty extracting this information through this test system at the National Library of Medicine.

One of the things that I would encourage you to do, Senator, is to ask EPA for a full and detailed report on the performance of these data sites and how we can assure that this hope that the data will be deliverable and in easy and accessible form to the public really come to its true fruition.

Senator LAUTENBERG. Because if the only ones who can access this information are those with computer skill or computer equipment to reach it, we do not give the broad distribution that I think this information deserves to the public at large, and it is a question, of course, of how the data is manipulated; what can we do to make the items of major importance clear?

So we have got quite a job, but we have made a giant step forward, I think, and I thank you both for your testimony.

Thank you very much.

The next panel is Mr. Robert D. Kennedy, who is chairman of the board and chief executive of Union Carbide and chairman of the Executive Committee of CMA; and Mr. Dostel, who is the corporate director for Safety and Environmental Affairs, Security and Loss Prevention at the Dow Chemical Company.

I would ask, if you would, please, recognize that you are under oath. This is an oversight hearing.

[Witnesses sworn.]

Senator LAUTENBERG. Thank you.

Mr. Kennedy, we welcome you again and invite you to give your testimony in as summary a fashion as you can do it.

STATEMENT OF ROBERT D. KENNEDY, CHAIRMAN OF THE BOARD, PRESIDENT, AND CHIEF EXECUTIVE OFFICER, UNION CARBIDE CORP.; AND CHAIRMAN, EXECUTIVE COMMITTEE, CHEMICAL MANUFACTURERS ASSOCIATION

Mr. KENNEDY. Thank you, Mr. Chairman.

My name is Robert D. Kennedy. I am chairman and chief executive of Union Carbide Corp.

I am appearing here today on behalf of the Chemical Manufacturers Association. We are pleased to respond to the committee's invitation to review the results which have been achieved under Title III of SARA.

We believe that the subcommittee and the Congress as a whole should have some sense of satisfaction with respect to the progress that has been made as a result of the enactment of Title III. Cer-

tainly the members of the chemical manufacturing industry can testify to a record of compliance with both the letter and the spirit of the law. We believe that long-term continuing results will benefit the industry and the Nation.

I would like to point out some of the positive results. First, as a result of Title III and the events leading up to it, chemical companies have begun simply to intensify their efforts to talk with their neighbors. Most major chemical plants have long had good working relations with local police, fire, and health authorities. The establishment now of local emergency planning committees as required under Title III has provided a new and important and beneficial focal point for those relations.

In addition, the impact of title III has encouraged chemical companies to do a better job—much better, I should say—of sharing information with the public, visiting community groups to hear their concerns first-hand. I have done some of this myself.

We have not gotten, of course, everyone to love chemicals, and we will not, but we have opened some eyes. We have started the kinds of dialogues that are going to benefit all of us in the years ahead. We have told them how much our companies have already done to reduce emissions and make our plants and processes even safer.

We have learned that most people do not expect miracles, but they do expect communication, open and honest, and they expect and want progress. Union Carbide and the members of CMA are determined to achieve the kind of environmental performance that our neighbors want and deserve.

Secondly, the generation of the emission inventory data and its publication by EPA in March of this year highlighted an important fact, and that fact is that routine permitted emission levels of toxic materials are indeed too high. Industry efforts to reduce the levels of emissions started even before the enactment of Title III and are now picking up speed.

Because I know our own experience the best, I would like to tell you a little bit about what Union Carbide has done in preventing pollution and reducing emissions.

Since 1985, the year immediately following the Bhopal tragedy, Union Carbide's chemicals group has reduced the annual amount of chemicals released to the air by 17 million pounds; that is a 45 percent reduction. We have cut the amount of hazardous waste generated annually by 64 percent since 1982; that is a 96-million-pound reduction per year.

In the State of New Jersey, our chemicals and plastics plants have cut their emissions by 56 percent since 1985. We are now embarked on what we call a second phase of a comprehensive emissions reduction program. I think the subcommittee will be interested in this. We are committed to a process of continuous reduction of emissions and wastes. We will control the emissions from our facilities so that exposure levels of potentially harmful chemicals in the communities neighboring our plants are at least 1,000 times lower than those permitted in the workplace, 1,000 times lower than worker exposure.

Our ultimate goal as we upgrade our technology and operating practices is the complete elimination of emissions of known or sus-

pect human carcinogens or those materials that become known or suspect carcinogens.

We are also committed to reduce the large volume of section 313 emissions, many of which are much less noxious and toxic, by at least 50 percent.

We have established a policy within the corporation that assures that minimization of process waste is the highest priority in the design and operation of all facilities. Our waste minimization efforts focus on prevention techniques as our first priority, as has been suggested here earlier.

When that is not possible, we strive to reuse waste materials. Over 50 percent of the RCRA hazardous waste we generate is today recycled or reused. Only when source reduction and recycling are not feasible do we turn to treatment and disposal as final options.

Our program is not unique. Many other members of the Chemical Manufacturers Association have emission reduction programs that are just as far-reaching and challenging. Specific details and the objectives will vary from company to company because each faces its own set of problems. Differing chemicals, a wide range of different processes, differing age and location of plants, the availability of adequate technology are very important factors that will influence the rate of progress.

But the overall results are clear. Title III, we believe, is producing a very significant speed-up in the reduction of toxic emissions to all media—land, air, and water—and that is pollution prevention where it works the best, at the point where it starts.

Title III also lays the foundation for further progress in other areas of pollution prevention. The Pollution Prevention Act of 1989, which you, Mr. Chairman, have introduced as S. 585, contains, we believe, many concepts that we feel are important to workable waste minimization legislation. The creation of a national data base to help track progress in this area will be, as has been title III, a useful additional incentive for pollution prevention.

Third, title III data reveals a situation that is clearly unacceptable to the public and Members of Congress,—the current section 112 approach to regulating toxic air emissions is not doing the job and is not capable of doing the job. I agree; the industry agrees.

It is time to move ahead with the challenging task of formulating new legislation that makes sense to everyone. The members of the CMA have begun to work with members of the committee here in addressing that challenge.

I will hold the rest of my remarks, sir, for questions and answers.

Thank you.

Senator LAUTENBERG. Thank you very much, Mr. Kennedy.

Mr. Dostal.

STATEMENT OF ROBERT L. DOSTAL, CORPORATE DIRECTOR, SAFETY, ENVIRONMENTAL AFFAIRS, SECURITY AND LOSS PREVENTION, DOW CHEMICAL CO.

Mr. DOSTAL. Mr. Chairman, my name is Robert L. Dostal, Corporate Director of Safety, Environmental Affairs, Security and Loss Prevention for the Dow Chemical Company.

I appreciate the opportunity to appear here on behalf of Dow to share our thoughts on our SARA, title III, section 313, report.

We at Dow fully support the public's right to information about our operations and about our emissions. The power of public knowledge of emissions by my company and others and the voluntary reduction of those emissions are extremely important. We believe that SARA, title III, augments our existing programs, again voluntary efforts, to pinpoint areas for improvement at our plant sites.

SARA also has provided a number of communication opportunities. We have actively shared our emission data and our reduction commitments with our employees as well as the plant communities around us. We have sponsored regulatory issue training seminars across the country for our customers.

Additionally, through a product stewardship program called Chemaware, we are assisting our customers with their waste reduction efforts to enhance that.

Dow's commitment to waste reduction has enabled us to achieve a consistent decrease of emissions. Through our program called WRAP—or Waste Reduction Always Pays—employees are encouraged to discover ways to reduce waste on the job. Effective employee suggestions have included process redesign, improved utilization of byproducts, operating procedure changes, and optimization of process control.

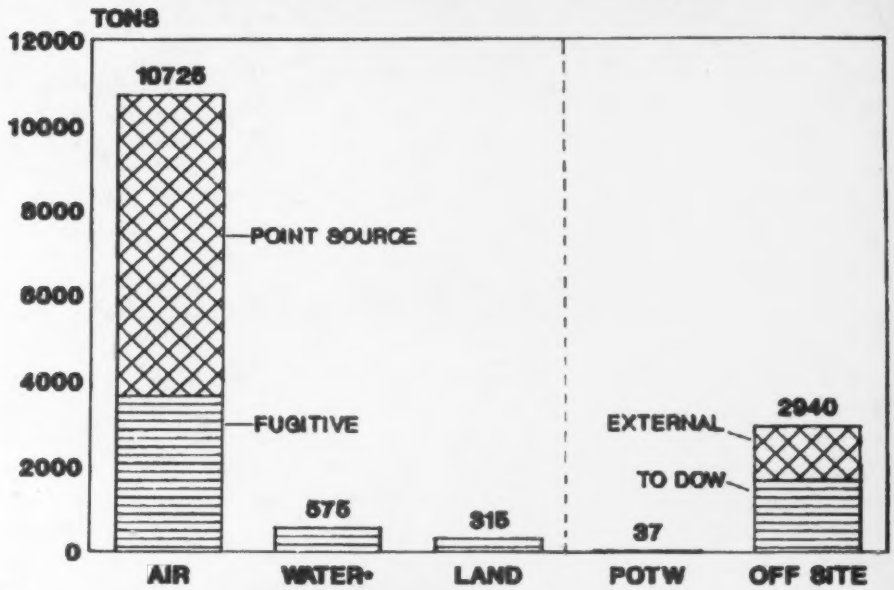
The reductions of waste which our employees have achieved have been significant, and this team effort will contribute to the reduction of 313 emissions as well as to the reduction of all emissions.

Now I would like to show you our 1987 SARA, section 313, numbers. The data on this chart is an aggregation of our 24 reporting facilities across the United States. They submitted 324 form Rs in putting that data in. The amount of 313 chemicals released on-site—that would be on the left side of the chart—in 1987 was 11,600 tons. Of that total, 92 percent of the releases were to the air, 5 percent to the water, and 3 percent to the land.

We would also like to note that of the 2,900 tons that were sent off-site, 57 percent of that material was sent to other Dow facilities for incineration because incineration was not available at that site. We did not include sodium sulfate in these numbers, which is considered a low-toxicity component currently being evaluated by EPA for de-listing.

The low percentage released to land and water by Dow reflects our management commitment in the early 1970s to high-temperature incineration as our treatment of choice, as opposed to land disposal of those combustible materials. The incineration of waste resulted in a significant cost to Dow which focused our attention on the importance of reducing waste rather than treating it. This leads us to our current philosophy of waste reduction, not waste treatment.

DOW SARA 313 DATA

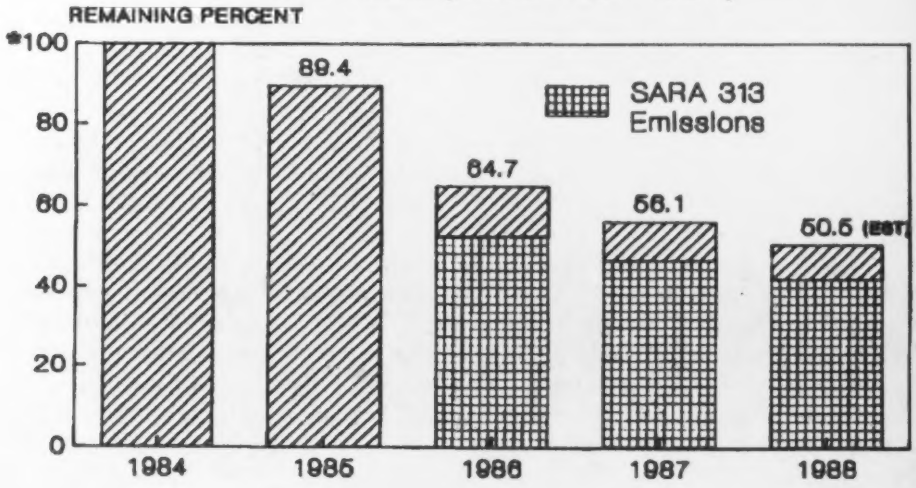


*EXCLUDES SODIUM SULFATE (100,000 TONS)

Dow Chemical U.S.A.

Air Emissions from Chemical Production

1984-1988 (Base Year 1984)



*1984 Emissions 30% of 1974 Emissions

Mr. DOSTAL. The philosophy that evolved is now written into the policy of the Dow Chemical Company. The policy establishes a hierarchy, recognizing source reduction as the first and preferred option of waste management, followed by recycle and reuse, then treatment, and as a last option, disposal in a secure landfill.

Dow strongly supports EPA's pollution prevention policy statement, which recognizes source reduction and environmentally sound recycling. The recycle/reuse of byproducts is an integral part of our operating facilities. It is critical to economically sound operations, and it ultimately prevents pollution by not having to treat or dispose of that waste stream.

Now, as an example of how we have applied our waste management practices, this second chart shows that Dow has achieved a 44 percent reduction in air emissions since 1984. These are voluntary reductions that place our operations well below the compliance levels, and we are happy to report that our 1988 estimates look even better.

This has been achieved during a period of steady increases in production that we have seen. The orange area indicates the portion of our releases that are SARA 313 compounds. It should be noted that the 1987 emissions are 83 percent less than our 1974 emissions.

Although we have achieved significant reductions to air, water, and land, we are not satisfied at that level. Further reductions are planned, and our goal as a corporation is continuous reduction of all emissions to the environment.

We believe that SARA, title III, is working because of the power of public knowledge. Public knowledge of emissions will reduce emissions faster than prescriptive legislation. We at Dow favor voluntary waste reduction approaches. We recognize that continuous improvement in the reduction of emissions is critical to earning public confidence in our industry.

That completes my statement. I would be happy to respond to any questions.

Senator LAUTENBERG. Thank you very much.

Mr. Kennedy, since you mentioned the Bhopal accident and it is still very much in the public purview, I would like to clear up one thing. It is my understanding that Union Carbide no longer manufactures or uses the substance that was released in Bhopal. Is that the case?

Mr. KENNEDY. That is correct, yes, sir.

Senator LAUTENBERG. How does the litigation stand there?

Mr. KENNEDY. The litigation in Bhopal, or the litigation phase of the Bhopal tragedy, was ended on February 14, we believe, when the Supreme Court, having heard argument since the first of November almost continuously for 3 months, from both the Government of India and lawyers representing Union Carbide India and Union Carbide, ordered a settlement of $470 million, which the Government agreed to immediately, and we also agreed to immediately, and those monies were deposited with the clerk of the Supreme Court a week following that decision.

Together with that, the civil charges and criminal charges were gathered up to the Supreme Court and quashed at that time.

There have been appeals. This terrible situation has been tied up in the political and legal arena for 4 years, and those who are in opposition for one reason or another have been heard in Supreme Court. They have an infinite capability, in Indian courts, to hear motions and appeals, but we believe that it is settled.

Senator LAUTENBERG. My assistant just reminded me that we are talking about the Indian Supreme Court, not the American Supreme Court.

Mr. KENNEDY. Absolutely.

Senator LAUTENBERG. Because it might be a little confusing.

The fact is that, hopefully—Mr. Kennedy, you are relatively new to the responsibility at your company; we wish you well—hopefully, that we will not see any longer term deterioration of condition for those who were exposed. We, all of us, I think, learned something significant from that accident.

We are encouraged by the testimony that each of you gave that says that the right-to-know law was a good thing to do, that the information gathered is positive, and that you share our goal of reducing pollution.

I was curious, Mr. Dostal. The charts are attractive; the goals, significant. What do you think was the prime cause for the action taken by Dow? There was not a significant legal requirement to do that. It was on its way, I think, and I am interested to know what moved you along as you did in such a positive way. Was it better corporate citizenship? Was there an economic factor underlying this? What was the inducement, or were the inducements, to get going on this?

Mr. DOSTAL. Well, as always, as you might expect, there were several motivators. One that I mentioned, just touched on in the testimony, and that particularly has an impact on that material going to the land and to the water was the fact that, very early on, we felt a commitment to go to high-temperature incineration.

That cost a lot of money to build the facilities, to operate the facilities, et cetera, which focused, then, our attention on the fact that to treat those materials was going to be expensive and therefore drove us back up the hierarchy to source reduction, to looking at alternatives for recycling those materials internally.

I would also have to say that with respect to air and the improvements that we have seen here in this period of 1984, although they were voluntary, et cetera, as a result of Congressman Waxman's survey that he brought out, I think it was in 1985, it focused our attention on—you know, we have more emissions in some areas than we had been cognizant of, if you will. We knew them in the specific areas, but as we aggregated them, it posed a real opportunity for us.

So we set about using what we call the continuous improvement process, which is involving all of our people—I am talking about operators, maintenance people, first-line supervisors—in a team effort to come up with determining where the losses are, determining what alternatives we might have in order to bring success about, and you see the results of the program.

Senator LAUTENBERG. In your industrial world, Monsanto, a major company, responded to the emissions reporting requirement

by projecting 90 percent reductions in emissions. Would you comment about how your own operations compare?

Mr. KENNEDY. Sure, Senator. You asked Mr. Dostal about the motivation for some of the reductions, the voluntary effort that has gone forward, and I can testify to that in a very personal way.

Senator LAUTENBERG. Please do.

Mr. KENNEDY. I faced an outraged crowd of citizens in Institute, West Virginia, in the summer of 1985, just 2 weeks after I had been given the administrative responsibility for our chemical operations, and I became personally convinced that the public could shut you down.

At that time, we said, and we stated a program, that we were going to reduce the pounds of materials being emitted from our plants in this country and the number of individual incidents or occurrences of emissions by 30 percent a year for the next 3 years, and in the meantime, we would look around for a scientific basis for going forward from there. The 30 percent reduction per year was clearly pulled out of the air in response to what we perceived to be a great need to show real improvement and real action.

We have been on that track, and as I said in my prepared testimony, have now gone to the program of zero emissions of carcinogens, and other emissions beyond our fence no greater than one one-thousandth of that which is permitted in the workplace. And while those programs are unique to Union Carbide, I think similar are being picked up by our sister companies not only in the United States but around the world.

When Monsanto and Dick Mahoney made that statement last June, he made at the same time a corollary statement saying this: "We weren't sure," he said, "that we have the technology to bring this about by 1992." And that is true, I think, across the board as well.

As new legislation is considered, we want to urge that proper consideration is given or grandfathered to those who have already made voluntarily great progress. And so the establishment of base lines that are equitable and recognize prior performance, we think, are quite important.

Senator LAUTENBERG. Mr. Dostal.

Mr. DOSTAL. If I might say there, we operate with a philosophy currently that the goals ought to be set by our various operating divisions, of which we have six around the United States, so in those cases we are able to take into account the particular processes and the state of the technology, et cetera, that exists at those particular plants.

Those have been communicated, not in an aggregate form as Monsanto did, but to the local communities, either through the normal contacts we have, or in some cases we have citizen advisory groups that we actually relate with in bringing that forth. So I think we have the goals set, but they are not aggregated on a national basis.

Senator LAUTENBERG. OTA has indicated that Dow's leadership in pollution prevention is significant. Mr. Kennedy, Carbide's pollution prevention efforts, as we heard from you, are moving along. How do you think your programs compare to those that we heard from Mr. Dostal?

Mr. KENNEDY. I think they are quite comparable, Senator, with one exception. We wish that we had had the prescience 4 or 5 years ago to go as heavily into incineration as Dow and only one or two others in this country have gone.

It is increasingly difficult, as you know, today to move into incineration, not because of the cost but because of the permitting problem, and as we look around the world at practices that are acceptable in Europe and in Japan, I think we see ourselves being restricted maybe in a way that environmentally is not sound and certainly economically is not sound in the ability to go at the end of the chain toward high-temperature incineration.

With respect to the total number of pounds emitted, the SARA title 313, reports, however, our numbers are comparable to those of Dow considering the size of our facilities and the number of facilities reporting.

We set for ourselves in 1985 a goal as one of the lessons of Bhopal and a memorial to that event that we would be second to none in the world with respect to our concern for safety and the environment. In seeking that goal, we find that there are formidable people who have been leaders and have been working in this area for years.

I cannot say today that we are second to none. I can say that I believe that we have the most rigorous management system in place of any corporation in the world, starting with our board and an Environmental Safety Committee of our board, which is composed entirely of outside directors and headed up by Mr. Russell Train; an independent audit committee of 44 people which reports directly and only to me and audits our facilities around the world for compliance and process safety, and so on down the line.

Senator LAUTENBERG. Are those employees of the company?

Mr. KENNEDY. They are employees of the company who, as I say, it is a 45-man corporate department that reports to me, has a separate budget, and is really responsible only to me.

Senator LAUTENBERG. Were there any surprises in your company's volume of emissions that you discovered in the accumulation of data for the right-to-know requirements?

What we have heard from around the country is that many companies with simply nothing to conceal were just surprised, when they were assigned the task of accumulating this information, that the volumes were as great as we found out.

Nationally, we were astounded to find out—and you have heard me question the other witnesses as to how reliable, how complete the information that we got is.

I just ask either one of you, was there anything in the information-gathering process that you found as unique in terms of the volume of material that emitted as a result of your operations?

Mr. KENNEDY. I would say we were not particularly surprised. If I go back 5 or 10 years, the answer might have been different, but the chemical industry, not only in this country but around the world, took some, I think, draconian measures in the wake of Bhopal to examine things like the amount of inventories of highly toxic materials kept on the premises.

Senator LAUTENBERG. Balancing those inventories?

Mr. KENNEDY. Balancing, reducing, just simply reducing the number, the amount of highly toxic materials. The unthinkable had happened, became thinkable in 1984, and that caused a total reexamination.

The officers and directors of the Chemical Manufacturers Association, in early 1985, got together and set forth a new policy on air toxics which required of members that they establish and take account of an inventory, prioritize the chemicals that they were handling in terms of relative toxicity, look for emission reduction programs, and begin to address themselves to the kinds of good management practices which I think we now see are prevailing.

The problem I see as an industry is bringing everybody in the industry up to speed. The major players clearly, I think, understand their responsibilities and are facing up to them pretty well. Getting everybody up to speed, smaller companies with fewer resources, less staff, that is one of the problems we are addressing, and I think we are going to address, through executive leadership programs and good exchange of useful information.

Senator LAUTENBERG. How would either of you and your respective companies decide what substances to target for emissions reductions and source reductions?

Mr. DOSTAL. Let me try that, and let me go back in response to the previous question.

I think by the data displayed here, this is something we have been following over the years, but I would also have to be honest with you——

Senator LAUTENBERG. That is in air?

Mr. DOSTAL. Yes, this is in air, and the numbers for water and land are significantly lower, but the progress we made getting down to those levels. But I would be honest with you to tell——

Senator LAUTENBERG. Was your inventory—I am not looking for the way you operate your company internally—did you have a balanced inventory structure before? It would be highly unusual. I don't think that was the practice at all.

Mr. DOSTAL. No. I would side with Mr. Kennedy relative to the fact that the new look that you take whenever there is an unfortunate incident out there and the learning that you get from it, minimizing the inventory, finding ways to create that raw material in situ so you don't have it at all, there are a lot of different techniques from a technology standpoint that you can utilize. So we also went through that.

With respect to the improvements, I would also have to be able to say with all honesty that every time you go through a reevaluation like getting the data for the first time for 313, it focuses a little bit different attention, and we found a few areas that needed more work than we had been emphasizing for that particular area. So I think you get that.

With respect to your last question, and how do we go about arriving at that, obviously, there are a number of different streams and a number of different plants and sites that go into the add-up of this data that you see here, and we have a program whereby we consider the toxicity of the material that is involved in the emission, the volume of that particular emission, and then take that

forward to evaluating the potential effect that that might have on the health and the ecosystem that surrounds the area.

And then ranking that in a priority system then allows you to focus your attention on the most important items, taking those aspects into consideration; and then the development of plans and goals for the achievement of the reductions that need to be made in those particularly high-potential areas.

Senator LAUTENBERG. Mr. Kennedy, does CMA provide any guidance for member companies on which substances to target for pollution prevention or emissions reduction?

Mr. KENNEDY. No, it does not, Senator. CMA does not enter into the operating and product details of its member companies. But what CMA has done consistently and is moving even more aggressively toward is the encouragement of management practice codes, not quantitative—how many pounds of this product or how many pounds of that product, because those are quite unique to each manufacturer and each location, as Mr. Dostel has said.

But the establishment of generic practice codes and principles of conduct which are universal is extremely important, because the care for this in a manufacturing establishment has to start with a commitment of the senior executives and go right down through. That has been true in the case of worker safety, in which area the chemical industry has had the leading record in the country for many, many years. It is equally true with respect to safety and environment.

CMA, for example, if I may, established in 1986 a Community Awareness and Emergency Response program which included good management practices for all its members. Today there are 1,500 chemical plants in the country that have a CAER—Community Awareness and Emergency Response—program in place, meaning that they have appointed coordinators, have met with local first responders, have set up emergency response plans, have dialogue with respect to the kinds of chemicals being made, stored, handled, and so forth.

Mr. DOSTAL. And to build on the code of practices, if I might, that Mr. Kennedy alluded to, having participated in the committee that is formulating that, there is one on Waste and Release Reduction that is going to specifically focus on that particular area, and that then will go out, and is going out, to the member companies at the present time.

Senator LAUTENBERG. I think there is an important role that they could play, again respecting each company's proprietorship, and I wonder whether some of the smaller companies have the same facility that giants like yours do to get information, and whether or not CMA, if they have those smaller members—I assume that they do—couldn't be a source of some information for them.

Mr. KENNEDY. Well, it is working pretty well, Senator. SARA, title III, is a pretty good example. CMA and all of the companies in CMA recognized that the reporting burden of SARA, title III, was going to be very, very complex for smaller companies, getting the material together, getting it computerized, feeding it into EPA. And then dealing with the public reaction to that information as it became known was going to be very important.

So CMA organized and conducted seminars all over the country for small companies, large companies, plant management, people who are really going to be dealing with the local public, starting about 6 months before the first SARA, title III, information was turned in, to create not only a sense of urgency with respect to the need to communicate locally to our neighbors, but also how to deal with the questions and how to deal with what had been mentioned earlier: How do you size up tons of materials being released on an annual basis to the health effects in the community?

So there has been a lot of big brother-little brother kind of work going on that is pretty useful.

Mr. DOSTAL. And those programs were very well attended.

I would also add, in addition to that, I am sure that Carbide—and I know from Dow's standpoint this is true—is also working with the raw materials suppliers as well as their customers in being able to carry this message forth, also.

Senator LAUTENBERG. I would hope so. We would like to see them be as aggressive as some of the companies have been individually.

Do either of you have any recommendations on how EPA can improve its pollution prevention effort in short form, if you will?

Mr. DOSTAL. I think it is extremely important that in what they have laid out with respect to source reduction and environmentally sound recycle, I think in understanding the hierarchy that source reduction is ahead of environmentally sound recycling, but they are both extremely important in an integrated plant facility.

If I could just cite one brief example, that is that many of our processes operate at very high percentage yields, 99 percent, et cetera, but there are some processes that operate maybe only at 50 percent yield, and this might be in the agricultural or the pharmaceutical area. Mother Nature just does not allow you to make 90 percent of that particular product.

So then the focus of attention becomes, how do you reduce those, improve source reduction? It is nigh onto impossible. I will not say it is, but it is very, very difficult. So then you focus your attention on how you can recycle, and in fact we have many, many instances where we have taken a byproduct off a process with a 50 percent yield and used that and designed a new process with that as the specific feed stock to be able to make another chemical.

Now, that is environmentally sound recycle as we would look at it, and we would hope that that would be incorporated very high in the hierarchy and recognized as a very important waste management criterion.

Senator LAUTENBERG. How does EPA achieve that?

Mr. DOSTAL. I think EPA is recognizing that in their policy that they have put out.

Mr. KENNEDY. I would like to ask, Senator, that we retain the ability to clarify and distinguish between the role of EPA, which Mr. Dostal has spoken to, and the proper role of OSHA in regard to these issues, because the continuum between workplace safety and what workers are exposed to and in fact what workers do and what goes over the fence line is a real continuum.

If we analyze, as we did in the wake of OSHA's wall-to-wall, so-called, inspections of chemical plants in 1985 and early 1986, the kinds of things that were causing emissions, not just chronic emis-

sions but episodic emissions, a great deal of it has to do with management practices, worker training, worker retraining, and good workplace practices.

We are a little concerned that if we put all the burden on EPA in this game that we may ignore a very, very important part of the solution, which is workplace practices inside the plant.

Senator LAUTENBERG. Appropriately noted in the record, and we thank both of you for your testimony.

Senator LAUTENBERG. I will call the next panel. Mr. Elkins and accompaniment is the way I see it.

Mr. Elkins and any of your colleagues who are going to offer any testimony here are all subject to the oath because this, once again, is an oversight hearing.

[Witnesses sworn.]

Senator LAUTENBERG. Thank you for staying with us here through this fairly long hearing, and we invite you, Mr. Elkins, now to testify.

STATEMENT OF CHARLES L. ELKINS, DIRECTOR, OFFICE OF TOXIC SUBSTANCES, ENVIRONMENTAL PROTECTION AGENCY ACCOMPANIED BY FREDERICK STIEHL, ASSOCIATE ENFORCEMENT COUNSEL FOR PESTICIDES AND TOXIC SUBSTANCES, OFFICE OF ENFORCEMENT AND COMPLIANCE MONITORING, EPA; JERRY KOTAS, DIRECTOR, OFFICE OF POLLUTION PREVENTION, OFFICE OF POLICY PLANNING AND EVALUATION, EPA; AND A.E. CONROY II, DIRECTOR, OFFICE OF COMPLIANCE MONITORING, OFFICE OF PESTICIDES AND TOXIC SUBSTANCES, EPA

Mr. ELKINS. Thank you, Mr. Chairman.

As you know, I am the director of the Office of Toxic Substances at EPA. We have the responsibility for implementing the Toxic Release Inventory, which is the subject of this hearing.

Joining me here at the table is Mr. Gus Conroy, who is director of the enforcement program; Mr. Fred Stiehl, who is associate enforcement counsel for this program in the Office of Enforcement and Compliance Monitoring; and on my left, Jerry Kotas, who is the director of the Office of Pollution Prevention in EPA.

Mr. Chairman, as we come to 1990, we come to a third decade since Earth Day, and I believe we will see a different approach to pollution control than we have seen for the last couple of decades.

As you are very much aware, we have had a very aggressive pollution control program in this Nation for the last 20 years, but it has focused primarily on end-of-the-pipe controls and cleaning up mistakes that we have made in the past in the handling of chemicals, specifically Superfund problems.

I think we would all have to agree that there has been great progress in that pollution control effort, but the Toxic Release Inventory, the numbers just released recently in which you participated, demonstrates the need to redouble our efforts on those kinds of controls but supplement them with pollution control, source reduction, pollution prevention kinds of efforts.

Clearly, as has already been announced, I think both the Congress and the administration see the need for a new Clean Air Act in specifics.

It is timely that we have this Toxic Release Inventory because both President Bush and Administrator Reilly have enunciated a national goal for pollution prevention. We have that commitment now at the top, and we need to make sure that the Toxic Release Inventory plays its appropriate role in helping to drive this pollution prevention program within EPA and outside of EPA. Our focus, mine in particular, is to perfect the implementation of this Toxic Release Inventory so it is the most effective force that it can be.

Last year we were before you to discuss our vision for this program, and you gave us a number of your recommendations for how this program might be implemented. Seven of them specifically dealt with the Toxic Release Inventory.

Your recommendations reinforced our vision of where we should be going with this program and how we should get there, and we have been trying to run this program against these common objectives. I thought this morning I would quickly report on our progress toward implementing those seven recommendations.

First of all, you called to our attention the need to make sure that the quality of the data in this data base is as good as possible, and we are committed to making this inventory as accurate as possible because we realize that the use of the data by the public as well as EPA is highly dependent on the quality of that data; that is, its accuracy in terms of our inputting it into the data base and, secondly, the accuracy with which the companies reported it in the first place.

During this year, we are spending about $1.6 million to try to assure that accuracy. As you can imagine, with 75,000 different forms, each of them five pages long, it is a long step from getting that to creating an inventory on a computer which is accurate. Forget about how good the estimates were from the companies. Simply translating those pieces of paper into a computer is a problem.

A misplaced comma or decimal point can make a lot of difference. The way in which people spell, for instance, Los Angeles—there are 14 different ways in which people spelled Los Angeles County on their forms—it is important that we, in creating this inventory, normalize those so that when you search for Los Angeles County, you can find it in this data base.

But in addition to that, we are interested very much in the accuracy of the reporting from the companies. We have been doing telephone checks where we see suspicious data, and we are doing some site visits.

The second objective which you recommended to us was that we give great emphasis to making the data base available both as an inventory, available through computers, and also by alternative means. It is said that knowledge is power, but in order for it to be power, the information has to be in the hands of the people who want to use it.

The Toxic Release Inventory is unique in the sense that it is an environmental data base designed primarily for use by the public,

and I think the emphasis here on computer accessible needs to be twofold. First is the emphasis on computers. The secret of the computer is, as you realize, that 75,000 separate pieces of paper are not nearly as useful as a computerized data base. The power of the computer to sort through those and give you the sort of data that you want is very important.

The second piece, of course, is communication; that is, making it accessible even in someone's home or in their local library.

We chose the National Library of Medicine as the instrument by which this would be delivered. The National Library of Medicine is experienced in providing data. They are committed to service to the public. I felt they could guarantee delivery on a timely basis to the public, which I was not assured of with some other circumstances, other vendors, and if we put it up ourselves on a data base. It also provides access to other toxicity data, and it is relatively cheap to the user.

We are now going through beta testing of this data base. We are doing at the present time testing for experienced users, and that is why some of Dr. Poje's colleagues are finding it a little difficult. But we are, in a couple of weeks, going to be beta testing the novice menus. I am sure that it will never be as easy as programming one's VCR or something like that, but we are trying to make it as easy as we can even for novices.

Other means are important because not everyone wants to deal with this as a computer data base, so we are trying to provide it in terms of microfiche, CD ROM—that is, compact disk read-only memory type systems—a national report and magnetic data. The details are there in my testimony.

You also recommended that we assist States and localities with data access. We see the States and localities as big users of the data, or they should be because we see a lot of profit coming from that. So we have supported training of them, and we have also provided fee waivers for the local emergency planning committees to try to involve them in the use of the data.

You recommended that we develop methods to respond to data inquiries. We have created a voluntary response network among health professionals at the State and local level, primarily the State. We have provided them fact sheets, a document we call the Risk Screening Guide, and something we call roadmaps, the latter being a pointer system so they can see where these chemicals are regulated and by whom. So we are counting on their being a very important link in the dialogue with the public about these data.

You recommended that we use the TRI data in EPA's regulatory programs. The public we see as the major user of these data, but from the very beginning, we recognized that an important user was the EPA programs. We have trained the regional offices and our colleagues in various media programs. We have a task force which focuses on the use of the data within EPA. Quite frankly, Mr. Chairman, I think the greatest force, the use of the data, within EPA will be this emphasis by the new Administrator and the President on pollution prevention.

Pollution prevention is a major new thrust of the agency, and it essentially goes to the intelligent use of chemicals and resources. Since my time is running short, I will be glad to answer some ques-

tions about the pollution prevention aspect of our program. Let me say that I see the Toxic Release Inventory as a major component of that pollution prevention program.

You asked us to make sure that we enforce particularly against people who have not submitted any forms at all. We brought enforcement cases, 39 in all, and there are some more in the pipeline. We have asked for some increased resources in the 1990 budget to enforce this.

Our difficulty, as you are aware, is that the legislation did not give us a clearly identified universe, and so a lot of our problem is identifying the universe and then trying to find within that universe which ones have not complied.

Finally, you asked us to limit the use of trade secrecy claims which would keep the public from knowing what was really going on in their communities. I am happy to report that we received only 200 trade secret claims, and we have narrowed that down to 45 and are still working on it.

Let me conclude, Mr. Chairman, by saying that I think the enactment of this Toxic Release Inventory has set off a chain of events. The end of the chain is still not in sight, but the reaction of the public—of industry, as you heard from Monsanto and Dow and Union Carbide, of regulators, such as those of us in EPA and the States—this chain will have a very dramatic effect, I think, in the 1990s.

I see the Toxic Release Inventory as a catalyst for these changes, and it is my very strong commitment to make this Toxic Release Inventory as effective as possible. I think we have made a good start. We have a way to go, but we are committed to making it even better in the coming years.

Thank you.

Senator LAUTENBERG. Thank you very much, Mr. Elkins.

Your colleagues are here with you, and since we are aware of their responsibilities, I would take the opportunity to direct a question to Mr. Kotas, since he is director of the Office of Pollution Prevention, and ask you the following: EPA has reported that the fiscal year 1990 budget includes almost $16 million for waste minimization. Is that a fairly accurate number?

Mr. KOTAS. Yes.

Senator LAUTENBERG. Can EPA really conduct a multimedia, agency-wide program with that size budget?

Mr. KOTAS. Senator, the budget amount that you talk about is that which is at this point explicitly devoted to pollution prevention. The function, I think, or the means that we achieve the shift toward prevention is a significant one, and it requires, I think, the work of the Office of Pollution Prevention to work with the Media Office to serve as a catalyst to make this happen.

I think we see, as Mr. Elkins pointed out, the Administrator making this a very top priority for him and for the agency. It is serving to also shift resources within our base starting in 1990, so we are going to see a great deal of activity, and that has already started to happen.

Senator LAUTENBERG. We know that the Administrator is serious; he has said it. He is very interested in pollution programs. We have heard that the President is interested in such programs. But

$16 million, unfortunately, does not buy you very much when the scope, the breadth of the activities, is so large.

It challenges for me, I must tell you, how serious the commitment is, whether it is getting the priority, among other things, that we would like to see, because we heard this morning—I am sure you listened to industry and others who have educated opinions to give—that they think that this is the right thing to do, and I know that you agree, personally.

Mr. KOTAS. I guess I would just like to add that it is an accurate estimate or statement of what is in the budget, but again, I think the level of activity that we are now seeing and we are encouraging and promoting within the agency, within all media offices, really reflects a much more significant contribution in this area.

I think you will see results of that activity within the agency in all parts and outside the agency, because some of our efforts are focused to encourage activity outside the agency as well. So I think the level of activity that is under way now at the Administrator's direction is going to be significantly higher than that. Again, I think our goal is that, as we move forward, the activity across all programs in the agency in concert take a prevention approach, and we are starting in that direction.

Senator LAUTENBERG. Well, if there are other resources available, it is going to come from significantly squeezed programs already, because what we have tentatively scheduled in the budget is not a lot of money for a lot of programs that EPA has responsibility for.

Mr. Elkins, last year EPA projected 30,000 facilities being covered by title III of SARA. You have gotten reports from a little over half of that number, 17,000, I think you are saying. Does that mean your estimates were wrong? Does that mean the estimates of the total universe were wrong? Does it suggest other factors in there that maybe really do not have us with an accurate picture of what might have been and what really is?

Mr. ELKINS. Mr. Chairman, the greatest difficulty we have is that we do not know the universe very well. Before we implemented this program, we made estimates of what we thought the universe was because we needed to do that in order to justify the paperwork reduction part of the requirement of the Office of Management and Budget.

We went to the data we had in the State of New Jersey, where we had a program operating for some time, as you know, and tried to look at that data base to then say what would this mean on a national basis, and with that data, we then said the third year of the program and the third inventory—we are coming up to the second one at this point—we thought we would hear from 30,000 facilities. We knew at the time that that was a rough estimate.

Since we received the data, we have gone back and asked ourselves, did we make some mistakes in those estimates? We still are having to make estimates, but I think the best judgment of my staff is that we did overestimate that it would probably be more like 25,000 or so that we should have heard from.

Now, as you mentioned, we have only heard from 17,000. I think the truth of how many facilities really should have reported will be

some time in coming, because we will find out a number of ways, one of which is our enforcement program.

The second one is, we are conducting a study outside of the enforcement context to try to look to see, to get a better sense of the universe by asking a number of questions of companies about whether they should have complied or not, and the results of that are not in.

The reason we received a substantial lower number of forms even from the 17,000 that we projected was that we had expected many more forms per company. We had projected ten forms per company. We got about an average of four. We think the four is more accurate, actually, because at the time we made those estimates, we had expected a lot more reporting on mixtures. I will not go into detail, but the rule allows sort of a phasing in of reporting on mixtures. So we would expect the number of forms to increase over the years.

So, in short, the answer is we have some underreporting, and we had some overestimating.

Senator LAUTENBERG. I think it is fair to say that we first, as much as we can, ought to verify the size of the universe and then, of course—you talked abut 39 enforcement actions—get on with these enforcement actions.

There are fines to be collected, but more importantly, there is the information that is required to help us take care of the problem, and we are in almost kind of phase II now of this.

Mr. ELKINS. Senator, I could not agree with you more. It is very important that we get people into this network of reporters because the people who have not heard about this program, giving them the benefit of the doubt, may well be also the same people who are really not aware of the emissions that we have of these chemicals, and we would like to know, and we think they should want to know, what they are emitting, and the people who live around them.

The question of how we get a better handle on the universe, I think you are absolutely right, we should look at the cases where we have regulatory programs in place at this time. This is more complex than simply looking at permits, but let me say that the 1990 budget for the President's budget includes $1.2 million for grants to States to do exactly this work, because it was our conclusion as we looked at how can we get into those permit files, how can we find these people, we decided our State colleagues are in a much better position than we are.

They know these facilities, they know a lot that is not written down, even, and so the proposal from the President is that we give $1.2 million to the States to have them link up these data bases and begin to identify these non-reporters. So we hope that, over time, we will have a better fix on that.

Senator LAUTENBERG. That is an important objective. We ought to know what is out there, and until we do, we will never know how much of the program we are covering and how effective our enforcement actions are.

Thirty-nine out of the numbers that we have reporting does not sound like an awful lot to me.

Mr. ELKINS. Mr. Chairman, what we are interested in, though, if I might say this, is compliance and not necessarily enforcement cases. We had a rather substantial number of people wake up to the fact that this requirement was imposed on them as those enforcement cases went out. So we are hoping, and I think it is being demonstrated, that these enforcement cases have more effect than just on the company that we bring the enforcement case against.

Secondly, let me assure you that more enforcement cases are in the works. I grant you that we would like to see more and we are trying to get more.

Senator LAUTENBERG. I think it has to be, because the risk of getting caught is fairly de minimis if you look at the ratio here.

The other thing is, of course, that while we are not in the business of collecting fines or putting companies in a bind, the fact is that there is revenue there to be obtained. Unfortunately, it does not flow back right into the program. That is something we ought to look at one of these days, because it does cause us problems in terms of who is going to pay for it and get it done. But we ought to get on with it. That is not a very serious enforcement threat, in my view.

How well is EPA keeping pace with its own enforcement objectives?

Mr. CONROY. Let me answer for the title III here, Mr. Chairman. We projected about 735 investigations in this current year. We have conducted some 350 as of the moment, and out of that, Mr. Elkins told you we have some 40 cases that have already been filed. There are a number of more coming. The violation rate on that 700 will be something like 20, 25 percent, I would estimate.

Next year we are planning to do 900 inspections of these firms. There is no telling yet, of course, what the regulated community is, so we cannot translate that to what the compliance rate is overall.

Senator LAUTENBERG. You said there were how many compliance inspections?

Mr. CONROY. For this year, 1989, 735 title III compliance inspections.

Senator LAUTENBERG. Are anticipated?

Mr. CONROY. Anticipated.

Senator LAUTENBERG. And where do we stand to date?

Mr. CONROY. We have done in 9 months something like 400—375, 400.

Senator LAUTENBERG. Is it possible that the pace can be accelerated to cover the year's objective?

Mr. CONROY. We will meet the year's objective, clearly. It is a very modest investment of resources that we have here.

Senator LAUTENBERG. Modest investment, modest return.

Mr. CONROY. We have hired, trained, and have an enforcement program going, modest as it is, with some enforcement results coming out.

Senator LAUTENBERG. What has been collected in fines for noncompliers with the emissions inventory requirements?

Mr. CONROY. We have proposed fines ranging from $10,000 to $750,000.

Senator LAUTENBERG. How much has been collected so far?

Mr. CONROY. None have been collected; none have been closed. But they have been proposed, and they are in that process.

Senator LAUTENBERG. Do you have any idea how much is being negotiated at this point?

Mr. STIEHL. Senator, we have a number of these cases that are in settlement discussions now, and I would say that we are hoping to collect anywhere from 50 to 80 percent of those penalties that are proposed. Obviously, you have to look at these case by case, and they are different, but we think we are getting a pretty good rate of return on those settlements that we get.

Senator LAUTENBERG. Do you have any idea, in total, what the size of the settlements proposed is?

Mr. STIEHL. Well, as Mr. Conroy indicated, the proposed penalties go from $10,000 to $750,000, and so it would be, in each of those, probably 50 to 80 percent.

Senator LAUTENBERG. Well, but each of them is not under discussion at the maximum or the minimum levels, and what I am asking is, do you have a compilation, do you have any idea, of the number of those that are in discussion, what range levels, or are you saying that it is open anywhere between the upper and lower limits?

Mr. STIEHL. It is really open anywhere, and of those approximately 40 cases that we filed, they are virtually all in settlement discussions now. So every one of those that are being handled by our regions are under consideration, and those numbers will result in approximately 80 percent to 50 percent of the proposed penalty in each one of those.

Senator LAUTENBERG. I guess the range is too wide to be as precise as I would like to see it, because we know that EPA is not asking or the enforcement party is not asking for $750,000 in every case. So what I was trying to do was get a feel for where we are in terms of the offers that had been made by the Government to see generally what we are talking about.

But whatever information you can gather on that for me, I would like to have, please.

Mr. CONROY. We will provide that for the record.

Senator LAUTENBERG. All right.

[Material referred follows:]

Congressional Hearing Held on May 10, 1989, Before the Subcommittee on Superfund, Ocean, and Water Protection Senate Environment and Public Works Committee

Question: "So what I was trying to do was get a feel for where we are in terms of the offers that had been made by the Government to see generally what we are talking about. But whatever information you can gather on that for me, I would like to have, please."

Answer: Listed below are the Emergency Planning and Community Right-to-Know Act (EPCRA) § 313 enforcement cases which have been settled. All of the other cases are currently in settlement negotiations or are proceeding to a hearing. The list provides the Region in which the enforcement action was taken, the name of the Respondent, EPA's proposed penalty, the final assessed penalty, and the percent reduction. The appropriate downward penalty adjustment is determined on a case-by-case basis, and may include factors such as: good faith efforts to comply, culpability, and ability to continue in business. These adjustment factors are enumerated in the EPCRA § 313 Enforcement Response Policy, and all of these cases were settled in accordance with this Policy.

Region	Respondent's Name	Proposed Penalty	Assessed Penalty	Percent Reduction
3	John W. Taylor Packing Co.	$25,000	$12,500	50%
3	Murry's Inc.	$17,000	$14,500	15%
3	Phil Carter System, Inc.	$10,000	$ 8,500	15%
9	United States Can	$34,000	$30,000*	12%
10	Middco Tool & Equipment	$ 5,000	$ 1,250**	75%
10	Fluorocarbon	$17,000	$14,450	15%
10	Girard Custom Coaters	$15,000	$ 9,000	40%
	Totals	$123,000	$90,200	27%***

* settlement includes publication of an advertisement concerning EPCRA compliance in three newspapers.

** settlement includes installation of a solvent recycling system.

*** average penalty reduction. This percentage was calculated solely on penalty amount collected and does not include other settlement expenditures such as the solvent recycling system.

Senator LAUTENBERG. Why has EPA budgeted so few agency enforcement positions for the emissions inventory requirements in the next fiscal year?

Mr. CONROY. My understanding is that it is 11 people and $2 million in contract funds, which is $1 million more than what we have in the current year.

Senator LAUTENBERG. I know that there are things that you have to live with, but if you had your choice, would that 11 people and $2 million give you the tools to do that job? Does anybody want to put their head on the chopping block? [Laughter.]

Mr. ELKINS. Mr. Chairman, all of us as program managers can always use more money if it is available, and certainly we have had to try to get the most out of each dollar.

Let me say that the contract money is very useful because $1 million of that goes to purchase the services of 25 grantees, older American grantees, who serve essentially as our employees, and they are very effective in this program. So we actually have a manpower force greater than might be implied by 11 full-time EPA employees; it is more like 36.

Senator LAUTENBERG. I can tell you, since I was one of the drafters, this is just not enough to convince lots of people that there is a commitment by EPA and by the administration to get this job done, and unless we really get on the ball with tough enforcement, aggressive enforcement, and numbers of enforcement actions, there are going to be lots of people who are going to yawn at this thing and say, What the heck? Our chance of getting caught is fairly slim, and the penalties, if we do get caught, are not very severe.

Mr. Elkins, Dr. Poje expressed concern over the ability of the public to make use of the national data base, and you discuss in your remarks about how the information ought to be made available. Is there anything beyond that which we saw in your testimony that you would like to add to that?

Mr. ELKINS. Well, we certainly agree with Dr. Poje that it should be as accessible as possible, and in fact we have been working with him and others to try to use our dollars in as fruitful a way to achieve that as possible.

I think it is a little too early to make that judgment, even though it is only a month-and-a-half from now to the time we expect to have the data base available. We expect much more of a user-friendly interface menu system to be available to the public than Dr. Poje has seen yet. Time will tell, and I don't want to promise that it will be perfect, but it will be a lot better than he has seen yet.

Senator LAUTENBERG. You heard me ask the people from industry and others about whether or not they were surprised at the volume of emissions that we discovered in the reporting thus far.

Just kind of subjectively, were any of you surprised at the volume of emissions that we discovered? Did you think that it was that high? Did you think that there were any surprises in that information at all?

Mr. ELKINS. Well, I think there is a mixed answer to that, Mr. Chairman. I think that many of us were individually surprised, but I think that if you asked us, then, to analyze, give all the data why we were surprised, asked us as analysts to tell you why we were

surprised, we would be in a difficult position to say why. It is more, as you say, a subjective feeling because we do not have a base line. And so when you ask us as analysts, we would have to say we have no base line. It could have been any number.

But I would say that just for those of us who have been working in this field for a few years sort of our subjective feeling, I think our feeling is that these, as has been said earlier today, are just the tip of the iceberg in terms of the number of chemicals that could have been on the list. By and large, we think that these are among the more toxic ones. It is not a perfect list, but it is a good list.

It is disturbing, 20 years after we have had this very aggressive pollution control program, to still see that we have so many billions of pounds of toxics released. It has renewed my conviction and, I think, that of many of my colleagues who work in the pollution control aspects of the agency to think we need to do something different; we need to do more than we have done.

Senator LAUTENBERG. I, for one, am pleased at the fact that we have been able to get the information, begun to digest it, understand what we have out there, make use of it. I think that is a very important first step or step along the way to getting serious legislation and regulation out there that say we are determined to cut down the exposure to the people across the globe as well as to our natural resources that comes from this material, and I am pleased to see that the companies are finding an economic value to dealing with it differently and finding ways themselves.

There is a lot of genius out there, a lot of creativity in the industrial world, in addition to the academic and government world. Is there any process that checks the veracity or relationships generally of the data to the reporting facility? Is that a run that is made in the processing of the information?

Mr. ELKINS. Yes. I think we still have some room, somewhere to go, though, in terms of getting the computer to be able to pick out some of these strange-looking numbers. We have done some of that. We have made a number of contacts, over 300 contacts, with industry about those. We are now going into site visits where you can make a much more specific inspection.

I think the ultimate output of that, in addition to possible enforcement cases, will be to write guidance to the industry about how to make these estimates, to keep them from making good-faith mistakes, perhaps, about how they report this, and so I am hopeful, over the years, that we will give much better guidance. That is certainly one of our objectives.

The best way, we think, of getting data quality is to get voluntary compliance by the reporters who know how to do it. The public knows how they should have been doing it, and they do it because they know they are in a fishbowl.

Senator LAUTENBERG. Have you had many companies come up and say, look, this is an incredible hardship; it does us no good; we are wasting our money, our time, and the Government's effort. Do you get that?

Mr. ELKINS. We got that particularly at first, but I think, quite frankly, the chemical industry has provided a lot of leadership in this regard. They realized early on that the law was here, that it could have some benefits. It could also have some very

serious down sides, and those down sides would be emphasized if they did not get their members to do a very good job of it. So I would say the chemical industry has done quite a good job on that.

But keep in mind, as you are pretty much aware, that most of the reporters are not in the chemical industry; they are the customers of these chemical companies. I think that is the weak link in this whole system. The testimony you had today was from chemical companies. It is in their economic interest to use fewer of these chemicals, to keep fewer of them going out the smokestack or whatever.

I think, for their customers, it is, first of all, not so clear that it is an important enough problem for them in terms of their overall raw materials that it makes any real difference economically to them whether they would save 20 percent on the use of this chemical.

Secondly, speaking frankly, I do not think it is always in the interest of the chemical companies to point out that they could use 20 percent less of a particular chemical, and so there is no economic incentive except just good stewardship on the part of the chemical companies to advise their customers about how they can do pollution prevention.

I think this is something we need to work on as a Nation because a lot of the releases are coming from the users of these chemicals. They need some help. I think the evidence so far, Senator, has been that we are not talking about a lot of heavy technology here for pollution prevention; we are talking about knowledge—to take a simple example, walking around a plant on a regular basis looking for the releases from flanges and pipes, and when you see a release, have a system in which that is repaired within 24 hours. A lot of companies do not have that outside the chemical industry.

Senator LAUTENBERG. I will close by asking you this: Is the Administrator's Office committed to pushing other EPA offices to use the emissions data for setting regulatory and enforcement priorities?

Mr. ELKINS. Yes. Clearly, the previous Administrator, who was much more familiar with this law, of course, than the present one who has just come into office, was very much aware of that, and that is why he created a task force, and we have been trying to work through how the various offices could operate, and I know the new Administrator shares that.

Let me say, though, having shared that task now for the last year, that how I would describe it is that you can lead a horse to water, but you can't make him drink. I think, until the data base was available, my colleagues who run the various pollution control programs within the agency heard what I was saying and heard what the Administrator was saying, but they were concerned about data quality; they were not quite sure how it fit into their program.

I see that changing dramatically. I think as the data now are available, they have a very concrete idea of how they can use it in their programs. I see them beginning to do so. I think, over the next 6 months to a year, you will see that they will do it not because someone told them to do it but because they realize this is a new tool they have, a new picture of what is going on that they did

not have, and that it gives them an idea where they could be more effective in running their programs.

Quite frankly, that is the reason they ought to use it in their programs and not because I told them they should or the Administrator did. I see that beginning to happen. It has not happened completely yet. During the next year, I would see a lot more of that.

Senator LAUTENBERG. Well, I would have to say this. I appreciate what you just said. I do not quite feel like Edison and the light bulb, but I do feel that the arm wrestling that we were doing in 1986 now, and with the very intense efforts of my aide here, Seth Mones, doing a lot of the work, it was worth it.

It is a heck of an effort to get all parties to agree on the development of this data base and this information, but I feel it was worth it and that some day, and I think even now, this will serve to improve the quality of life, the health of our citizens, the protection of our environment generally; and you leave me, at this end of this hearing, feeling pretty good, with a lot of work yet ahead of us, but we have gotten a good start.

Thank you very much for being with us.

This hearing is adjourned.

[Whereupon, at 12:29 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

STATEMENT OF

OFFICE OF TECHNOLOGY ASSESSMENT

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, OCEAN AND WATER PROTECTION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

May 10, 1989

Mr. Chairman, OTA appreciates the opportunity to appear today. Our testimony is on the importance of the Toxic Release Inventory (TRI) data, obtained by EPA under Section 313 of the Emergency Planning and Right-to-Know Act, in relation to pollution prevention. Joel Hirschhorn, Senior Associate at OTA and director of several OTA projects on waste reduction, on hazardous waste management, and on Superfund, prepared today's formal statement but could not be here. I am Kirsten Oldenburg. I have worked with Dr. Hirschhorn for some years in the hazardous waste and waste reduction areas, and was Assistant Project Director of OTA's reports Serious Reduction of Hazardous Waste and From Pollution to Prevention: A Progress Report on Waste Reduction.

The basic technical concepts for reducing the generation of hazardous waste and all environmental pollutants have been known for decades. But OTA takes pride that its 1986 report Serious Reduction of Hazardous Waste put

pollution prevention into a public policy context and crystallized a number of issues about its implementation. More and more people have come to understand that, whatever the government does about environmental protection, a choice is nearly always possible: either we use public policy instruments which try to control toxic waste and environmental pollutants and discharges after they are generated, or we recognize - and act on the recognition - that there are more health, environmental, and economic benefits to be gained from preventing the generation of harmful substances.

The limits to traditional pollution control have become clearer. Major local and global environmental problems are not going to be solved effectively with pollution control alone - or with pollution prevention alone, either. Both are necessary. The OTA message remains this: A fundamental shift in strategy that puts pollution prevention at the top of the hierarchy of environmental options is technically and economically feasible, but it will happen only in special cases unless government forcefully helps the strategy shift. Regardless of its environmental and - we stress - economic benefits, voluntary efforts by industry will not take full advantage of waste reduction opportunities without strong government support. The Toxic Release Inventory (TRI) data, obtained by EPA under Section 313 of the Emergency Planning and Right-to-Know Act is one such important government action.

Today, OTA addresses these issues:

o The enormous amount of releases reported to the public first a few weeks ago -- about 20 billion pounds of toxic chemicals -- is just the tip of the toxic tower. We estimate that as much as 400 billion pounds, or 200 million tons, of toxic substances in wastes, pollutants, and discharges are probably being generated by American industry annually -- and even more if one

considers non-point sources, such as automobiles. This massive amount of toxic material is the national environmental incentive for pollution prevention.

o This mass is also waste in an economic sense. A rough calculation of the costs of the raw materials, energy, and labor to ultimately produce this waste and the costs of using pollution control, waste management, and regulatory systems to deal with this waste may amount to some $100 billion a year. This is -- or should be -- the national economic incentive for pollution prevention.

o With all the progress made in the past few years in bringing pollution prevention -- also called waste reduction, source reduction, or waste minimization -- to a much higher level of importance in the private and public sectors, the nation still lacks a clear, high priority commitment to pollution prevention backed up by strong government policy, institutional commitment, and effective funding.

o From the beginning, OTA's work on obstacles to industrial waste reduction and public policy options has stressed that a strong Federal pollution prevention program does not have to rely on traditional prescriptive regulatory tools. Just as pollution prevention differs from pollution control, the ways which government can promote maximum use of pollution prevention differs from the ways it has implemented pollution control. A strong and effective Federal pollution prevention program can be based on these key efforts: (1) using electronic technology to efficiently collect, analyze and transfer information to industry and government units on the means of waste reduction, including other people's successes and failures; (2) providing funding to state and local technical assistance programs because

they are best able to deal with local industries to help them overcome their particular obstacles to waste reduction; (3) providing a national policy framework that helps everyone understand what counts as pollution prevention, how to measure its costs, benefits, and progress, and how current government regulatory programs and information collection systems (such as TRI) can be used to assist prevention efforts.

These areas are discussed more fully below.

THE TRI DATA

Based on the following reasoning we believe that the initial TRI data underestimate the true amount of toxic chemical release in the United States:

1. There was underreporting because of gross noncompliance with the reporting requirements. Some facilities provided no information at all, and others probably underestimated releases. Some underreporting may be intentional, but many facilities probably found it very difficult to figure out what they were releasing. We suggest multiplying the TRI data by two for nonreporting and underreporting.

2. The statutory requirements for reporting don't cover all chemicals and facilities. Besides the 300 plus chemicals listed, there are many thousands of toxic chemicals being used and released by industry, some known to be toxic, many lacking any scientific data to assess their toxic properties and effects. There are many facilities with fewer than 10 workers which handle toxic chemicals. We suggest that means multiplying the TRI data by 10.

Therefore, to get a better sense of the national toxic loading of the environment we multiply the TRI total of nearly 20 billion pounds by 20 to get a rough estimate of 400 billion pounds annually, or 200 million tons.

Although this seems enormous, it is low compared to other data on regulated materials, such as more than 500 million tons annually of RCRA defined hazardous waste. There are at least two reasons for this: (1) amounts of regulated materials often include the weight of water in the material, and (2) there are materials regulated as hazardous which, by a strictly scientific definition, are not toxic, such as some acids and inflammable substances.

Lastly, the health and environmental significance of the TRI data has been given very different interpretations. While at times the public may overreact upon hearing of enormous quantities of toxic material released into the environment, there remains a legitimate basis for concern. True, releases don't tell the whole story on exposures, risks, and health or environmental effects. But the instincts of people are basically correct. Even after taking account of dispersion and dilution of chemicals, effective management controls, and natural chemical degradation, there surely is still cause for worry about dangerous risks. The public, it seems, has an intuitive grasp of the significance of multiple, cumulative, and possibly synergistic exposures to toxic chemicals from many different sources and directions. But will the government make use of the TRI data itself? For example, now that the government has the TRI data collection system operable, will it use the data in its exposure and risk assessments for Superfund and RCRA site cleanups?

To sum up, the TRI data, perhaps more than other information coming from the Federal government, provides an environmental incentive for pollution prevention. 20 years of ever-increasing environmental regulations, based on pollution control, have not been able to prevent an enormous mass of toxic material from entering the environment on a daily basis, nor to prevent a continuing stream of environmental accidents and problems.

WASTE ECONOMICS

In all of our waste reduction work we have stressed its economic implications. America spends a greater fraction of its GNP on trying to meet environmental objectives than any other industrialized nation and far more yet when compared with the newly developing nations. Over the past 20 years national environmental spending has steadily increased and there is no reason to think that the American public is going to reduce its demands for effective environmental protection. We think that the pollution control strategy, however, is becoming more and more inefficient; that is, the marginal costs of applying traditional pollution control and waste management techniques are increasing. This situation increasingly pits health and environmental benefits against economic, employment and competitiveness goals.

Pollution prevention offers a way for industry to get itself out of the regulatory system and reduce its costs while improving environmental protection. How much do we pay as a nation to deal with all our environmental wastes? The data compiled by the Commerce Department suggests a current national cost of over $80 billion, but, based on our work and discussions with industry people who submit information to the government, we believe that this figure underestimates actual spending by a very large amount. We understand that the Commerce data does not include many items of non-capital spending, such as consulting and legal services, and internal company support costs for regulatory compliance.

Another important cost to industry is the money it spends on raw materials, energy, and labor to produce the waste described by the TRI data. Environmental wastes are a fundamental symptom of industrial inefficiency.

The goal should be to reduce to a minimum the amount of environmental waste per unit of industrial output. We have estimated that up to 50 percent of all environmental wastes can be cut with existing technology and with an economic benefit to the waste generator - although not by all industries or companies. With R&D, even more is possible. Note that minimum waste generation is not zero waste generation. The laws of physics and chemistry tell us that some waste will always be produced in some operations, but there is no law that says we have to produce as much waste as we do now.

If we assign a rough production cost of 5 cents per pound or $100 per ton to the 200 million tons of toxic chemicals we produce, then that adds another $20 billion to the cost of generating TRI materials. Therefore, we think it a rough but accurate estimate that the total national economic incentive for pollution prevention is upwards of $100 billion per year, and rising.

PROGRESS ON POLLUTION PREVENTION

The good news is that more companies and government agencies are taking pollution prevention seriously: EPA formed an Office of Pollution Prevention; EPA's Science Advisory Board concluded that the agency ought to make a strategic shift to pollution prevention; President Bush said in his budget report that "Reducing waste at the source is the best way to deal with the problem;" a number of large companies set high waste reduction goals and instituted strong programs; a number of states (such as North Carolina and Massachusetts) formed waste reduction programs; Congress appropriated special funds for EPA's efforts; and last year both Houses passed waste reduction bills. There is an unending number of conferences and articles on the subject.

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The bad news is that the nation's pollution prevention efforts are scattered and uncoordinated, lack permanent institutional support, lack strong funding, and, for the most part, pale in comparison to the established pollution control culture. More specifically:

--EPA's efforts remain several levels below the Administrator in the organization and are underfunded.

--EPA's continuing attempt at establishing a pollution prevention policy has not been able to resolve a basic definitional issue: Should pollution prevention remain faithful to the goal of reducing waste generation at its source? If so, then it should not include conventional recycling efforts; recycling may be the best form of waste management, but that is not the same thing as not producing waste to begin with.

--EPA has not made much progress in using its current information collection systems to measure national waste reduction.

--State programs lack significant funding and are often misdirected to assisting companies with regulatory compliance.

--There is very little useful, reliable information on exactly what companies and industries are accomplishing in a systematic way. Case examples help make the case for the feasibility of waste reduction, but they do not convincingly show what companies are really accomplishing.

--Congress has not yet passed legislation that deals comprehensively with pollution prevention, addresses true multimedia waste reduction that is not constrained by current, relatively narrow environmental statutes, and which establishes the Federal role in the national effort.

To sum up, the message to those who generate environmental wastes remains mixed. The Federal government has not yet crystallized national objectives and mobilized the means to achieve them.

POSSIBLE NEXT STEPS

OTA's research on waste reduction quickly focused on identifying obstacles to what seemed, on the surface, self-evidently beneficial. We discovered a host of important reasons why people in industry might not implement waste reduction, even though it would be in their economic self-interest to do so. For example, they might not really believe that there were ways to reduce their generation of environmental wastes; they might have competing priorities - for their time and money - including making a product and complying with current end-of-pipe pollution control regulations; they didn't typically have good information on exactly what wastes were produced, and where and why; they didn't think that the economic benefits would be significant and usually didn't have a good way of calculating them; they sometimes didn't think that pollution prevention gave more environmental benefits than pollution control; and usually companies didn't explicitly reward waste reduction achievements comparably to traditional worker accomplishments.

We see three critical areas for Federal leadership:

(1) EPA could use electronic technology to efficiently collect, analyze and transfer information to industry and government units on the means of waste reduction, including other people's successes and failures. This must be a major, multimillion dollar ongoing effort that reaches out to all of American industry.

(2) Congress could provide grants to state and local technical assistance programs, because they are best able to deal with their local industries to help them overcome their particular obstacles to waste reduction. The successful experiences of several state and local technical assistance programs have demonstrated the it takes aggressive, in-plant help to overcome obstacles to waste reduction. Although government technical assistance is much cheaper than regulatory programs and rapidly pays for itself because of increased corporate profits and taxes, it requires more than the current token levels of funding.

(3) From a strong organizational position, such as an all-agency office headed by an Assistant Administrator, EPA could provide a national policy framework that helps everyone understand what counts as pollution prevention, how to measure its costs, benefits, and progress, and how current government regulatory programs and information collection systems (such as TRI) can be used to assist prevention efforts. The fact that EPA Administrator Reilly invoked the need for pollution prevention when he recently released the TRI data was just the kind of senior leadership needed. But the words must be backed up by a strong program to turn the theoretical benefits of pollution prevention into realty.

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STATEMENT OF
GERALD V. POJE
OF THE
NATIONAL WILDLIFE FEDERATION

BEFORE THE SENATE SUBCOMMITTEE ON
SUPERFUND, OCEAN AND WATER PROTECTION
UNITED STATES SENATE
AT

HEARINGS ON
THE
TOXIC RELEASE INVENTORY AND
POLLUTION PREVENTION
MAY 10, 1989

My name is Gerald V. Poje. I am the environmental toxicologist for the Environmental Quality Division of the National Wildlife Federation ("NWF"). The National Wildlife Federation is the nation's largest citizen conservation organization, with over five million members and supporters nationwide, and with affiliated organizations in 49 states plus Puerto Rico and the Virgin Islands.

I thank the Chair and members of the Subcommittee for the opportunity to provide written and oral testimony on recently released data collected pursuant to section 313 of the Emergency Planning and Community Right-To-Know Act (Title III) and on the need for a national pollution prevention program.

The Federation lobbied intensely for the passage of the Superfund Amendments and Reauthorization Act (SARA), and for the past two years, NWF has worked to assure that key provisions of the law are implemented fully. NWF also strongly supports the establishment of a national industrial pollution prevention policy to guide the Environmental Protection Agency (EPA) and to promote prevention activities at the state and local level. An aggressive source reduction program is essential for any progress in environmental protection. NWF commends Chairman Lautenberg and members of the Subcommittee and the full Committee for their strong support in passing Title III. Furthermore, we thank Senator Lautenberg for holding this hearing to oversee the first national database of toxic chemical emissions into the air, water and soil, and the implications for national pollution prevention policy.

I. **Summary**

Mismanagement of toxic chemicals and hazardous waste threatens America's environmental health and economic security. The amount of chemical emissions and waste production is truly alarming, and is increasing. Existing and potential impacts of toxic chemicals on the environment and public health are monumental: all environmental media are affected; and for some persistent hazardous chemicals effects may be accumulating. Finally, the economic impacts of inefficient chemical management are consuming scarce industrial and governmental resources which could otherwise be devoted towards improving industrial competitiveness and resolving other pressing national issues.

Based upon the recently released Toxic Release Inventory data collected for 1987, NWF recommends the following:

1. **Promote source reduction.** Pollution prevention is the key to solving the toxic threat, and pollution prevention means source reduction. Environmentally sound recycling is not part of a definition of prevention.

2. **Establish a national reduction goal.** Federal source reduction policy designed to achieve actual reductions in the generation of toxic emissions and hazardous wastes should state a national goal for the amount to be reduced each year.

3. **Tie environmental permitting to reduction efforts.** Industrial performance should be measured against the national reduction goal through comprehensive multimedia waste reduction permit certifications. Putative permittees should be required to certify that the facility is reducing its toxic chemical emissions and hazardous waste generation consistently with the expressed national goal for all water pollution permits, hazardous waste treatment, storage, and disposal permits, and air pollution permits.

4. **Conduct new research and gather new information.** Claimed waste reduction by permittees should be substantiated through the submission of detailed product-specific and process-specific information, which forms the national reduction database.

5. **Provide technical assistance grants.** Pollution prevention programs should emphasize the importance of technical assistance grants to states for source reduction. Federal grant money to the states will promote technical assistance and reduction research at the local level.

6. **Involve the public in source reduction efforts.** Pollution prevention is a public responsibility. The permit information must be appended to an accessible database, so that the public has a role in risk reduction.

7. **Change EPA's infrastructure.** EPA must elevate pollution prevention to a prominent role within the agency's programs. A high level, independent Office of Pollution Prevention directly answerable to the EPA Administrator must be authorized to identify and require reduction practices for industrial processes discharging hazardous pollutants to all environmental media.

II. Why Is Pollution Prevention Necessary?

Despite EPA's recent claim that "substantial progress has been made over the last 18 years in improving the quality of the environment"[1], hazardous waste generation and toxic chemical mismanagement pose massive threats to this nation's environmental health and economic security. EPA should issue an urgent alarm to the nation stating that toxic chemical mismanagement has endangered the local, national and global environment. First, the amount of waste production and toxic emissions is truly alarming, and the trend is towards increase not reduction. Second, the existing and potential impacts of hazardous waste and toxic chemical emissions on the environment and public health are monumental: all environmental media are affected; and for some persistent hazardous chemicals effects may be accumulating. Finally, the economic impacts of inefficient waste management are consuming scarce industry and government resources which could otherwise be devoted towards improving industrial competitiveness and resolving other pressing national issues. Pollution prevention including emissions and waste reduction must be

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1. U.S. Environmental Protection Agency. 1989. Proposed Pollution Prevention Policy Statement. Fed. Reg. 54 (16): 3845-3847. January 26, 1989.

implemented immediately and comprehensively to resolve these problems.

A. Hazardous Waste Production Is Massive.

EPA recently released the 1987 Toxic Release Inventory (TRI) data collected as required by the Emergency Planning and Community Right-To-Know Act. Summary data indicated that in only one year 9.7 billion pounds of chemicals were released to streams and other bodies of water, 1.9 billion pounds were deposited into municipal waste water treatment facilities, 2.7 billion pounds were emitted into the air, 2.4 billion pounds were dumped into landfills and 3.2 billion pounds were injected into underground wells.[2] While these numbers are astonishingly high, they underestimate the true burden of toxic chemical emissions. The TRI data reports include only 328 chemicals, not all industries are required to report, and EPA has calculated a very high rate of non-compliance with the reporting requirements.

Currently, the United States annually produces and disposes of more than 2 tons of hazardous waste for each man, woman and child. According to the EPA's data[3], in 1985 about 275 million metric tons of hazardous waste were managed by 3000 facilities under the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984. Waste generators also produce over 300 million metric tons of RCRA exempt waste which is regulated by the Clean Water Act. In addition an estimated 20 to 35 million metric tons of hazardous waste are disposed in deep injection wells regulated under the Safe Drinking Water Act.[4]

Data comparisons over several years are difficult to interpret because of variable methods for estimating waste. However, the overall trend has been towards an alarming increase in the generation of waste. Early EPA estimates indicated less

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2. U.S. Environmental Protection Agency. EPA Releases Toxic Inventory Data. Environmental News Release, April 12, 1989.

3. U.S. Environmental Protection Agency, The Hazardous Waste System, Office of Solid Waste and Emergency Response, (June, 1987).

4. Safe Drinking Water Act, 42 U.S.C. §300f et seq.

than 10 million metric tons were produced in 1970, and annual estimates for 1980 and 1981 ranged from 40 to 50 million metric tons.[5] Today's better estimates have been calculated at over 600 million metric tons.

B. Toxic Chemicals and Hazardous Waste Threatens Our Nation's Resources

While documentation of the toxic chemical threats to human populations and their supporting ecosystems has already begun, the true impacts have yet to be determined. In fact, our understanding of the risks posed by many individual chemicals in hazardous waste streams is poor. According to the National Research Council,[6] no information on toxic effects is available for more than 75 percent of EPA's inventory of toxic substances; acute toxicity information is available for fewer than a fifth of these chemicals; and less than a tenth of the chemicals have been tested for oncogenic, reproductive or mutagenic effects.

Nineteen years after the establishment of EPA, there is still no comprehensive, accurate, up-to-date source of information on the release of toxic substances. The limited, available information is scattered in various permit files and technical documents. It is not computerized to facilitate data analysis, nor is it readily accessible to the general public, citizen organizations, professional groups, or regulatory agencies.

Better documented is the fact that mismanagement of hazardous waste has led to extensive contamination of air, water, and land resources. Our cause for concern continues to increase as the mysteries of long-range transport of hazardous chemicals in the air, water and soil unravel, and as the threats of accumulating toxic burdens become clearer.

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5. General Accounting Office, Hazardous Waste: Uncertainties of Existing Data, GAO/PEMD-87-11BR. Washington, D.C. (February, 1987).

6. National Research Council, Toxicity Testing: Strategies to Determine Needs and Priorities, National Academy Press, Washington, D.C. (1984).

1. Air Quality.

Almost 70,000 known chemicals are used in commerce in the United States. In addition, a large number of other chemicals are formed during chemical processes in industry and in the atmosphere. Substantial portions of these can become airborne and can cause a multitude of adverse effects when inhaled by people at sufficient concentrations. For example, EPA has recently ranked exposure to hazardous and toxic air pollutants as among the highest relative cancer risks. A quantitative assessment of just 20 toxic chemicals to which people are exposed in ambient air resulted in a calculation of more than 2000 cancer cases per year.[7]

2. Surface Water Quality.

The Congressional Budget Office (CBO) has estimated that more than a fifth of all hazardous waste is discharged to sewers or directly into rivers and streams.[8] EPA has compiled an analysis of state reports on the quality of surface waters.[9] In 1986, 22 states reported 8,500 of their stream miles showed elevated levels of toxic chemicals and 16 states reported toxic chemicals in 362,000 lake acres. Six states reported that 190 square miles of estuarine waters were affected by toxics. These contamination levels represent substantial increases as compared to the data reported in 1984. While some of this increase might be attributed to increased reporting compliance by the states, the total extent of contamination remains underestimated since few states have adequate monitoring or technical and analytical ability to analyze chemical contaminants in surface waters.

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7. U.S. Environmental Protection Agency, Unfinished Business: A Comparative Assessment of Environmental Problems. Appendix 1. Report of the Cancer Risk Work Group, Office of Policy Analysis, (February, 1987).

8. U.S. Congressional Budget Office, Hazardous Waste Management: Recent Changes and Policy Alternatives, U.S. Government Printing Office, Washington, D.C. (1985).

9. U.S. Environmental Protection Agency. National Water Quality Inventory 1986 Report to Congress, Office of Water, EPA-440/4-87-008. (November 1987).

3. Soil and Groundwater Quality.

CBO has estimated that land disposal accounts for almost two-thirds of all hazardous waste disposed.[10] The nation's groundwater, which supplies drinking water for almost 50 percent of Americans, is threatened by contamination emanating from injection wells, surface impoundments, hazardous waste landfills and sanitary landfills. Many of these contamination sources are poorly managed. For example, approximately 90 percent of the 16,416 active landfills have no liners to protect the underlying groundwater, and 96 percent have no system to collect the leachate that seeps from the landfill. More than eight out of ten landfills fail even to monitor groundwater, and 60 percent place no restrictions on the waste accepted.[11]

EPA's Office of Pesticide Programs has responsibility for evaluating individual pesticide products to assure that their use poses no adverse impacts upon human health or the environment. Conventional scientific "wisdom" during the 1970s falsely reassured the public that groundwater contamination by pesticides would not occur because soils acted as filters and the pesticides would volatilize or degrade rapidly. Discovery of aldicarb contamination in over 1200 Long Island wells and DBCP contamination in more than 2000 California wells, ended the blissful ignorance of agricultural pesticides' potential for widespread groundwater contamination. Since that time the number of pesticides found to contaminate groundwater and the number of contaminated areas has grown. EPA's recent report[12] indicates that 74 pesticides have been detected in the groundwaters of 38 states, with contamination by 46 of these pesticides in 26 states attributable to routine agricultural practices, in other words, the chemicals were used according to the label directions written by EPA.

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10. U.S. Congressional Budget Office, Hazardous Waste Management: Recent Changes and Policy Alternatives, U.S. Government Printing Office, Washington, D.C. (1985).

11. U.S. Environmental Protection Agency, Subtitle D Study: Phase 1 Report, Office of Solid Waste and Emergency Response, (October, 1986).

12. U.S. Environmental Protection Agency. Pesticides in Groundwater Data Base, 1988 Interim Report. Office of Pesticide Programs, December, 1988.

4. Multimedia Exchanges and Accumulating Burdens.

The most recognized incidents of hazardous waste mismanagement are the more than 20,000 'Superfund' sites around the country. Unfortunately, the adverse impacts of hazardous waste are not always restricted to their source, in either time or space. Just as the dramatic collapse of an oil tank along the Monongahela River near Pittsburgh, Pennsylvania can poison the drinking water of Cincinnati, Ohio after travelling for more than a hundred miles over several weeks, so too can a slow trickle of polychlorinated biphenyls (PCBs) into the Hudson River above Albany, New York eventually condemn a striped bass fishery along the Atlantic coast thirty years later. More alarming is the evidence that hazardous chemicals move from one media to another. PCBs and the banned pesticide DDT have migrated from contaminated soils, into the air and eventually have accumulated in the fish and wildlife of the Great Lakes many hundreds of miles away.[13]

Finally, an important lesson in caution must be drawn from our experience with chlorofluorocarbons (CFCs). CFCs are volatile chemicals which pose relatively low risks to people from direct exposure. However, CFCs can deplete the stratospheric ozone layer, thereby increasing the earth's exposure to cancer-causing ultraviolet radiation. Nevertheless, during 1987 the major manufacturing sector released more than 52 million pounds of the CFC, Freon 113, directly to the air.

Each year's wasteful emissions of CFCs has added to the global burden, such that EPA has projected a steadily increasing risk of melanoma and non-melanoma skin cancers resulting in over 20,000 annual deaths by the year 2100.[14] Prevention of additional emissions is essential. However, the existing burden of CFCs will continue to deplete the ozone layer for many years to come.

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13. Fitchko, J., Literature Review of the Effects of Persistent Toxic Substances on Great Lakes Biota, International Joint Commission, Windsor, Ontario (December, 1986).

14. U.S. Environmental Protection Agency, Unfinished Business: A Comparative Assessment of Environmental Problems. Appendix 1. Report of the Cancer Risk Work Group, Office of Policy Analysis, Washington, D.C. (February, 1987).

C. Mismanagement of Toxic Chemicals Threatens Our Economy.

With regard to the economics of toxic chemical mismanagement, the consequences of declining human health and environmental degradation dwarf all other economic costs, yet they have not been calculated. However, national, industrial, and governmental agency costs have been estimated. Substantial decreases in environmental spending across the board can be achieved by source reduction.

1. Waste Management Costs Are High and Increasing.

The Department of Commerce and others have estimated that national environmental expenditures for waste management have increased from almost $30 billion in 1975 to almost $70 billion in 1985.[15] These costs reflect many factors, including: how much waste is generated, how stringent environmental regulations are, and how regulations are enforced. Annual industrial expenditure for hazardous waste management has been estimated at $5.7 billion for 1983.[16] EPA's annual waste enforcement expenses have grown from less than $1 million in 1975 to more than $10 million in 1985.

Costs for hazardous waste management are increasing as tighter environmental regulations are imposed on disposal technologies, and as demand for disposal exceeds supply. Currently the nation's incinerators are operating at capacity, while active land-based hazardous waste sites have decreased by two-thirds. Incineration of organic chemicals has risen above $500 per ton and landfill prices have increased to $240 per ton.[17] Given the current difficulties in siting both incinerators and landfills, shortages in disposal capacity should lead to future cost increases.

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15. U.S. Congress Office of Technology Assessment, Serious Reduction of Hazardous Waste, U.S. Government Printing Office, Washington, D.C. (September, 1986).

16. U.S. Congressional Budget Office, Hazardous Waste Management: Recent Changes and Policy Alternatives, U.S. Government Printing Office, Washington, D.C. (1985).

17. Postel, S., Defusing the Toxics Threat: Controlling Pesticides and Industrial Waste, Worldwatch Paper 79, Washington, D.C. (September, 1987).

2. Source Reduction Is An Essential Economic Decision. Our past experience with unregulated hazardous waste has had a price tag estimated at more than $100 billion to cleanup the thousands of contaminated sites.[18] Source reduction is preferable by far. CBO has projected savings of $2.7 billion in annual industrial expenditures if waste reduction opportunities were pursued.[19] Actual cost savings for specific industries have been measured. For example, Exxon and Stauffer saved more than $200,000 annually from waste reduction practices.[20] Over the last twelve years, 3M has instituted nearly 2100 projects which eliminated the annual discharge of nearly 110,000 tons of air pollutants, one billion gallons of wastewater, and 280,000 tons of sludge and solid waste, while saving over $390 million by reducing pollution control facilities, operating costs, manufacturing costs, and increasing the acceptability of environmentally sound products.[21] However, the source reduction opportunities taken to date represent only the tip of the cost savings iceberg. Too few industrial facilities and too few processes within facilities have been targeted for waste reduction programs.

III. The Nation Must Implement A Pollution Prevention Program.

Although industry has been slow to recognize the importance of source reduction, EPA has been equally slow to focus on pollution prevention. EPA has been an underachiever in the waste reduction arena, fulfilling only the barest minimum of its waste reduction mandate pursuant to the 1984 amendments to the Resource

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18. U.S. Congress Office of Technology Assessment, Superfund Strategy, U.S. Government Printing Office, Washington, D.C. (1985).

19. U.S. Congressional Budget Office, Hazardous Waste Management: Recent Changes and Policy Alternatives, U.S. Government Printing Office, Washington, D.C., (1985).

20. Sarokin, D. et. al., Cutting Chemical Waste, Inform, New York, (1985).

21. The Woodlands Forum, Robert P. Bringer: World Should Share Environmental Protection Technology, Woodlands, TX (1987).

Conservation and Recovery Act.[22] Those amendments made three requirements relevant to waste reduction: certifications, biennial reports, and reports to Congress.

A. Certifications.

First, each person owning or operating a treatment, storage, or disposal facility (TSDF) for any listed RCRA hazardous waste is required to certify on the TSDF permit that "the generator of the hazardous waste has a program in place to reduce the volume or quantity and toxicity of hazardous waste to the degree determined by the generator to be economically feasible."[23] Generators of hazardous wastes are required by law to make the same certification on the manifest that is used to track hazardous waste from cradle to grave.[24] EPA has implemented these provisions by paraphrasing the statutory language on the permit and manifest forms and requiring generators to sign on the dotted line.[25] It is difficult to imagine how this boilerplate certification will result in any accountable reduction in hazardous waste generation.

B. Biennial Reports.

Second, generators of RCRA hazardous wastes, as part of their biennial reporting requirement, must set out their "efforts undertaken during the year to reduce the volume and toxicity of waste generated."[26] This is the most ambitious federal legislation calling for the collection of waste reduction information. But, the information gathered from generator biennial reports has contributed little to the waste reduction data base.

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22. Resource Conservation and Recovery Act of 1976, 42 U.S.C. §6901 et seq., (as amended November 8, 1984).

23. RCRA, 42 U.S.C. §6925(h)(1) (as amended November 8, 1984).

24. RCRA, 42 U.S.C. §6922(b)(1), (as amended November 8, 1984).

25. See 40 CFR §264.73(b)(9) (1987), 40 CFR Part 262 appendix (1987).

26. RCRA, 42 U.S.C. §6922(a)(6)(C) (as amended November 8, 1984), See 40 CFR §262(a)(6)(1987).

Responsible in part for the failure to collect relevant information is the biennial reporting form itself. The 1985 biennial report was the first to request generator waste reduction information. Part XVI of that report requested information on "Waste Minimization- (narrative description)." The agency gave so little guidance to generators concerning what constitutes "waste minimization," that respondents often cited waste treatment technologies outside the scope of even EPA's broad definition of the term, merely quoted the certification language, admitted having taken no waste reduction efforts or else simply allowed Part XVI to remain blank.[27]

C. The Report to Congress.

Finally, the 1984 RCRA amendments directed EPA to compile a report to Congress "on the feasibility and the desirability of establishing standards of performance or taking other additional actions under [RCRA] to require the generators of hazardous waste to reduce the volume or quantity and toxicity of the hazardous waste they generate..."[28] In its report,[29] EPA outlined its "core" waste minimization program to be implemented in the near future. Under that program, EPA stated its intention to continue collecting information on industry's response to existing incentives for waste reduction before making a final determination on the desirability or feasibility of performance standards and required management practices. EPA also endorsed technical assistance as "the strongest option available to promote waste minimization, especially in the near term."[30]

To implement its core waste minimization program, EPA requested $398,000 for fiscal year 1988, less than half of what

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27. U.S. Environmental Protection Agency, Generator Biennial Report for 1985, Part XVI, (1985). Copies of these reports, randomly selected by EPA, are on file at NWF's Environmental Quality Division.

28. RCRA, 42 U.S.C. §6982(r)(as amended November 8, 1984).

29. U.S. Environmental Protection Agency, Report to Congress: Minimization of Hazardous Waste, U.S. Government Printing Office, (October, 1986).

30. Id.

the agency spent compiling its report, and less than Congress seems willing to provide. During Congressional hearings on the EPA budget, Edward P. Boland, Chairman of the House Appropriations Subcommittee on HUD-Independent Agencies, asked Assistant EPA Administrator Winston J. Porter, "The resources [allocated by EPA for this program] are minimal, almost non-existent.... Doesn't this area deserve more money?"[31] Porter responded, "It perhaps does.... But frankly, we are seeing a lot of waste minimization going on already."[32]

The Report to Congress concluded that "[a]ggressive action in favor of waste minimization is clearly needed, but a major new regulatory program - at least for the present - does not seem desirable or feasible."[33] EPA promised to report back again to Congress in 1990. Despite EPA's intentions to capitalize on the existing "incentives and trends within the hazardous waste management system," progress in reducing hazardous waste generation has been almost imperceptible.

IV. Key Components For Comprehensive Pollution Prevention Program.

The current amount and trends on toxic chemical emissions are unacceptable in terms of public health, environmental health and sound economic practices. NWF recommends the following:

A. **Promote source reduction.**
B. **Establish a national reduction goal.**
C. **Tie environmental permitting to reduction efforts.**
D. **Conduct new research and gather new information.**
E. **Provide technical assistance grants.**
F. **Involve the public in source reduction efforts.**

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31. Department of HUD- Independent Agencies Appropriations for 1988: Hearings before the Subcommittee on HUD-Independent Agencies, 100th Cong., 1st Sess. 60 (1987)(testimony of the Assistant Administrator for Solid Waste).

32. Id.

33. U.S. Environmental Protection Agency, Report to Congress: Minimization of Hazardous Waste, U.S. Government Printing Office, Washington, D.C. (October, 1986).

G. Change EPA's infrastructure.

A. Promote source reduction.

True prevention includes only those practices which reduce the amount of any hazardous substance, pollutant or contaminant entering into a waste stream or otherwise released into the environment including fugitive emissions prior to recycling, treatment or disposal. Pollution prevention does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process separate from the production of a product or providing of a service. Source reductions can be achieved by:

1. equipment, technology, process or procedure modifications;
2. reformulations or redesign of products;
3. substitutions of raw materials; and
4. improvements in management, training, and other general operations of an industrial facility.

Recycling begins only after the generation of the waste or release of a hazardous substance, pollutant or contaminant into the environment. As such, recycling requires additional energy consumption and therefore promotes additional releases of warming gases to the global environment. In addition, the recycling process has the potential for generating its own waste streams into the environment, and the potential for increased environmental risks during transit and storage of hazardous substances. Finally, recycling can act as a disincentive to true pollution prevention by promoting economic markets for waste materials which thereby stabilize a production process at a given level of inefficiency.

B. Establish A National Reduction Goal.

In the 1984 amendments to the Resource Recovery and Conservation Act, (RCRA), Congress declared it to be the national policy that, "wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible."[34] The implementation of this declared policy must begin with the declaration of a national goal for reducing hazardous waste generation. A numerical or percentage goal for

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34. RCRA, 42 U.S.C. §6902(b) (as amended, November 8, 1984).

reducing hazardous waste generation rates would state a true national commitment to achieving actual reduction, and would serve as a standard, against which the progress of industrial waste reduction programs could be measured over time.[35]

Currently, inadequate data concerning diverse generation processes and other site-specific information make it impossible to assess source reduction potential for particular categories of industries. It is essential that our national source reduction program provide for the compilation of this information.[36] In the meantime, a national goal should be established to guide industry and government source reduction efforts. The Office of Technology Assessment, (OTA), has proposed that the government establish a national goal of a ten percent reduction in hazardous waste generation annually, for individual facilities, companies and for the nation as a whole.[37] Reducing hazardous waste generation in accordance with this goal would result in a 41 percent reduction after five years and a 65 percent reduction after ten years. The feasibility of the 10 percent goal has been consistently substantiated by industrial surveys.[38]

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35. EPA should seek guidance from the Great Lakes Water Quality Agreement as amended in 1987 which establishes as policy that "The discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated" (Article II, paragraph (a)).

36. Once again, the Great Lakes Water Quality Agreement as amended in 1987 provides guidance on reporting stipulating, "The Parties shall report,...biennially..., on the progress of programs and measures to reduce the generation of contaminants".

37. U.S. Congress, Office of Technology Assessment, Serious Reduction of Hazardous Wastes, U.S. Government Printing Office, Washington, D.C. (September, 1986).

38. Battelle Columbus Laboratories, Report on Hazardous Waste Management Needs Assessment, (1984). (Survey for the Tennessee Valley Authority found reduction potential of 11 percent RCRA wastes incinerated, and 33 percent for those landfilled by the year 2000). In OTA's own survey, 11 percent of the industries responding felt that 50-75 percent reduction was possible, 25 percent felt that 25-50 percent reduction was possible, and 59 percent felt that less than 25 percent reduction was possible. U.S. Congress, Office of Technology Assessment, Serious Reduction of Hazardous Waste, U.S. Government Printing Office, Washington, D.C. (September, 1986).

Another type of nationally applicable target is an efficiency standard. Like the percentage reduction goal, an efficiency standard would apply across all agricultural and industrial categories, limiting the amount of hazardous waste and toxic chemicals discharged from each process to a small percentage of the hazardous input for that process.

Recognizing the importance of a waste reduction goal in implementing its declared waste reduction policy, Minnesota has established a 31 percent target for long range waste reduction, with interim goals set up for each of fourteen different industrial categories.[39] The federal government should follow Minnesota's example and establish a national waste reduction goal to facilitate the implementation of the national waste reduction policy.

The national goal would serve as a benchmark for a multimedia source reduction certification program. This program would require all applicants for permits under the Clean Air Act,[40] Clean Water Act,[41] and RCRA, to certify specifically that they have a multimedia waste reduction program that is reducing hazardous waste generation in a manner consistent with the national goal. Ultimately, particular generators and categories of industries not achieving reduction consistent with the national goal could be targeted for special performance standards and technical and financial assistance.

C. Tie Environmental Permitting to Reduction Efforts.

In order to make pollution prevention a multimedia program, waste reduction certification must be made a part of each permit to discharge, emit, or dispose of hazardous wastes to any environmental medium. This certification would not only extend the RCRA waste reduction language over the air and waters, but would also extend the language to cover all materials considered hazardous or toxic pursuant to any federal statute. A waste

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39. Waste Management Act of 1980, Minn. Stat. Ann. §115A.11 (West Supp. 1985).

40. Clean Air Act. 42 U.S.C. §7401 et seq.

41. Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq.

reduction certification would be required on all permits for all substances listed as toxic or hazardous water pollutants,[42] hazardous air pollutants,[43] toxic substances,[44] substances under premanufacture or significant new use review,[45] substances registered as pesticides,[46] as well as RCRA hazardous wastes.[47]

Multimedia waste reduction permit certification would require all applicants to certify that the facility is reducing its hazardous waste generation consistently with the expressed national goal for all water pollution permits, hazardous waste treatment, storage, and disposal permits, and air pollution permits. The certification must be more than a mere check box. Putative permittees must substantiate their claimed waste reduction through the submission of detailed product-specific and process-specific information. Permit applicants who are not achieving reductions consistent with the national goal will bear the burden of providing detailed information substantiating why they are not meeting the goal. The Office of Pollution Prevention should have the power to deny permits to individuals and facilities not working towards the national goal.[48]

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42. See, Federal Water Pollution Control Act, 33 U.S.C. §§ 1317(a) and 1321(b)(2), Toxic and hazardous water pollutants are listed at 40 CFR §§129.4 and 116.4 respectively.

43. See Clean Air Act, 42 U.S.C. §7412(b). Hazardous air pollutants are listed at 40 CFR §61.01(a).

44. See The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (CERCLA), 42 U.S.C. §9601 et seq., also known as Superfund, as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub.L. 99-499, 100 Stat. 1613 (Oct. 17, 1986)(SARA).

45. Toxic Substances Control Act, 15 U.S.C. §2604(a).

46. Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §136a.

47. RCRA 42 U.S.C §6921(b). Hazardous wastes are listed at 40 CFR §261.33.

48. At least one state has employed a similar permitting program. In an effort to expand waste reduction efforts beyond its RCRA authorized program, New Jersey has experimented with waste reduction certification language in selected air and water permits. This has allowed the state to collect significant information concerning technologies which result in reducing air and water pollutants at their source.

The information provided through this certification program would be compiled into a database to enable EPA to assess which particular facilities and which categories of industries are not achieving reduction as called for by the national goal and thus warrant performance standards, and technical and financial assistance. This information should also be appended to the Toxic Release Inventory data collected pursuant to Title III of the Superfund Amendments and Reauthorization Act, (SARA),[49] and be made public under SARA's Community Right to Know provision.[50] This is essential if the public is to take a proactive role in reducing hazardous waste generation and toxic risk in their communities.

Finally, a pollution prevention program should delineate a specific plan of attack on the rampant problem of pollution hot spots. NWF urges the agency to target its activities appropriately in each program office. For example, in the Office of Water Programs, EPA should set as its highest priority for source reduction action, those sources emitting into water bodies unable to attain water quality standards.[51] Similar actions could occur within the Office of Air Programs for sources emitting into non-attainment areas.

D. Conduct New Research & Gather New Information.

Currently, no federal source reduction data base provides useful and reliable data. A data base of relevant, probative information is essential to any successful reduction program. The information collected through the source reduction permit certification will facilitate the establishment of such a data base. Implementation of a federal pollution prevention policy must specifically address the nature of the information to be

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49. The Comprehensive Environmental Response, Compensation and Liability Act of 1980, (CERCLA), 42 U.S.C. §9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub.L. 99-499, 100 Stat. 1613, (Oct. 17, 1986), (SARA); The Emergency Planning and Community Right-to-Know Act, SARA, §300 et seq. (1986).

50. Id., §324.

51. Federal Water Pollution Control Act, 33 U.S.C. §1314(l).

collected. It is important to collect process-specific information that can be measured against a production index to reveal how much hazardous waste was generated for each unit of production by each manufacturing process. In this way, variations in production from year to year will not mask waste reduction information.

The information gathered pursuant to the certification program and from technical assistance grants should be compiled with the SARA §313 Toxic Substances Inventory in a national clearinghouse, easily and cheaply accessible to both industry and the public. The Toxic Release Inventory should be strengthened to include chemical specific reporting of source reduction and recycling practices and goals.

Title III of Superfund,[52] authorizes EPA and state and local committees to engage in emergency planning, to receive notification of chemical emergency releases, to identify hazardous chemicals and their location at local facilities, and to build an inventory of releases of toxic chemicals at industrial facilities.

Section 313 requires owners and operators of covered facilities that either manufacture, process or otherwise use a listed chemical above a threshold amount to report annually the releases to the environment. The Toxic Release Inventory information is intended to provide information to Federal, State and local government officials, and to members of the public including citizens of communities surrounding covered facilities. EPA and the State in which the facility is located are to receive the reports. Under section 313 EPA is required to make the information available to the public by hard copy, and EPA must establish a publicly accessible computer data base.

The Congressional intent in enacting Section 313 of SARA was to insure broad access by government and the public to information concerning: 1) hazardous chemicals that may pose physical or health hazards to communities and 2) the multimedia routine emissions of those chemicals. The Toxic Release Inventory has three key features that makes it far superior to any alternative data set: the reporting is chemical-specific, emissions to all media are required, and improved access to

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52. SARA, §300 et seq.

information is guaranteed by appropriate trade secrecy regulations.

The risks posed by a particular waste stream cannot be judged without chemical-specific data. Similarly, the definition of waste reduction demands chemical-specific data, not vague information about the volume reduction of a general waste stream. Because the national objective is comprehensive waste reduction, multi-media accounting is essential if ever we are to avoid the toxics 'shell game' whereby chemical reductions in one media are matched by additions to another media.

Finally, data reported under Title III is more accessible to everyone-- a necessary precondition for wide dissemination of reduction techniques. Under the trade secrecy provisions of Section 322, spurious claims of business confidentiality are avoided, and the burdens of proof for trade secrecy protection appropriately shifts onto facility.

However, for the TRI Database to be useful to the broadest community of users, the data must be presented in a user-friendly fashion, subject to flexible aggregation and disaggregation, analyzed by statistical testing, and subject to merging with additional databases.[53] The TRI database must be managed so that citizens without computers can seek and receive TRI information comparable to that sought by computer users.[54] The TRI data must be comprehensive and accurate.[55]

E. Provide Technical Assistance Grants.

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53. Current testing of the computerized TRI data managed by the National Library of Medicine indicates substantial problems in data access and manipulation.

54. EPA's intention to utilize Local Emergency Planning Committees (LEPCs) as routes of public access to computerized TRI data under fee waiver provisions has not considered the numerous problems inherent in LEPCs.

55. To date, EPA, while cautiuosly evaluating delisting petitions, has not developed a comprehensive public plan of toxicological review to add chemicals to the inventory. Furthermore, EPA has been understaffed with the technical and legal talent to ensure compliance and vigorous enforcement of the law.

A national pollution prevention program should state the importance of state technical assistance grants for source reduction projects. Many state governments have taken initial steps toward establishing source reduction programs. The most common reason cited by states not having programs is lack of funds. According to OTA, state officials have suggested that if federal funds were delegated for reduction, state reduction programs would be instituted.[56] One obvious use for federal funds in the states is to provide technical assistance grants.

In many instances, businesses are willing to take steps to reduce toxic waste generation, but do not know where to find the information, and lack the resources to conduct the necessary research. Federal funds should be provided for state technical assistance programs that assist industries in obtaining waste reduction information, in identifying waste reduction potential within specific processes and in applying methods of waste reduction to those processes. Technical assistance programs should first provide assistance to those facilities which, due to the nature of the toxic substances or management practices used, present an imminent or substantial risk to public health or the environment, and those facilities requiring immediate assistance to achieve waste reduction consistent with the national goal.

States receiving federal grant monies for reduction should be required to establish technical assistance centers where reduction information organized by industrial category and manufacturing process would be made available to businesses and interested community groups. While the state technical assistance center would serve the industrial sector at large, special programs within the center would target those facilities not achieving multimedia waste reduction in accordance with the national goal.

A successful technical assistance program would have government-employed chemical engineers providing onsite advice, such as identifying in-process barriers to waste reduction, and conducting mass balance audits of the targeted facility. The employment of industry independent chemical engineers is

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56. U.S. Congress, Office of Technology Assessment, Serious Reduction of Hazarodus Waste, U.S. Government Printing Office, Washington, D.C. (September, 1986).

essential if the problem of inadequate governmental expertise concerning the diversity and specificity of manufacturing processes is to be overcome. The state scientists could communicate their waste reduction findings through waste reduction seminars for classes of facilities engaging in similar processes.

Other federal monies could be allocated to organizations and universities for the research and development of new waste reduction technologies. These new technologies would be described at the state technical assistance centers, with the state data base ultimately being assembled into a federal waste reduction clearinghouse.

It is important to note that the success of the technical assistance program depends on the quality and process-specificity of the data compiled through the proposed multimedia waste reduction permit certification program. The information collected must allow for both the identification of facilities not meeting the national waste reduction goal and the identification of waste reduction technology to allow these facilities to achieve the called-for reduction.

F. The Public Must Have A Role.

If the public at risk is to play a role in implementing the national policy of reducing toxic chemical emissions and hazardous waste generation, reduction information must be publicly available. Once aware of existing reduction technologies for various products and processes, citizens could play a role in seeing these technologies applied to industrial processes in their communities. The SARA's section 313 Toxic Risk Assessment information makes little sense if follow-up efforts are not taken to reduce toxic risks. SARA makes government, industry, and the public partners in risk assessment. A successful reduction program must extend that mission to one of risk reduction.

To this end, it is necessary that any trade secrets provision for reduction technology be applied very narrowly. The narrow language of SARA's trade secrets provision is well suited to assure that the process-specific information demanded by a waste reduction program demands is submitted. EPA's mandate with respect to trade secrets must be explicitly spelled out to avoid granting unwarranted trade secret protection, thereby thwarting the intent of both SARA and this waste reduction program.

Accessibility for the public means that the information must be available in hard copy format as well as computerized forms. For citizens to be full partners in promoting source reduction, the information in the reduction database also must be affordable to ordinary citizens and citizen organizations, and fee waivers must be accommodated.

G. Change EPA's Infrastructure.

A national pollution prevention program should reflect the prominent role of source reduction within EPA. A successful multimedia waste reduction program will require the establishment of an independent, high level Office of Pollution Prevention, headed by a Director, directly responsible to the Administrator. Until recently, waste reduction efforts were under the jurisdiction of EPA's Office of Solid Waste (OSW). That office, charged with the administration of RCRA, has fulfilled to the bare minimum its statutory waste minimization mandate pursuant to the 1984 RCRA amendments. Even were OSW enthusiastic about implementing the declared waste reduction policy, the office lacks the legal authority to regulate the generation of pollutants that are ultimately discharged to air and water.

EPA's new Office of Pollution Prevention (OPP), sequestered as a small program within the Office of Policy, Planning and Evaluation, should be elevated within EPA to address waste reduction on a multimedia basis. Its major function must be to effect a cultural change within each program office such that source reduction becomes the first line of action with each program office.

In addition to its several data collection, coordination and dissemination functions, the new office must be empowered to assemble a Pollution Prevention Task Force, the members of which would be drawn from EPA offices of Solid Waste and Emergency Response, (OSWER), Toxic Substances, (OTS), Water Quality, and Air Quality. This task force would be charged with reviewing existing and proposed EPA regulations for consistency with the national waste reduction policy, and with recommending regulatory changes to the Administrator. Another working group, consisting of industry and community group members should be established by the Office of Pollution Prevention to provide outreach to the industrial community and to the public at risk.

Further, OPP should be charged with administering the multimedia reduction permit certification program, and subsequent development of the national reduction data base and clearinghouse. In administering the technical assistance grants program, OPP must have the engineering capacity to conduct independent waste audits of facilities.

CMA
CHEMICAL
MANUFACTURERS
ASSOCIATION

WRITTEN STATEMENT

OF

ROBERT D. KENNEDY

CHAIRMAN OF THE BOARD, PRESIDENT

AND CHIEF EXECUTIVE OFFICER

UNION CARBIDE CORPORATION

ON BEHALF OF

THE CHEMICAL MANUFACTURERS ASSOCIATION

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, OCEAN AND

WATER PROTECTION

OF THE

ENVIRONMENT AND PUBLIC WORKS COMMITTEE

UNITED STATES SENATE

REGARDING

THE EMERGENCY PLANNING AND COMMUNITY

RIGHT-TO-KNOW ACT

TITLE III OF THE

SUPERFUND AMENDMENTS AND REAUTHORIZATION

ACT OF 1986

MAY 10, 1989

2501 M Street, NW 202-887-1100
Washington, D.C. 20037 Telex 89617 (CMA WSH)

The Chemical Manufacturers Association (CMA) appreciates the opportunity to provide testimony on the Emergency Planning and Community Right-to-Know Act, also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

CMA's member companies represent more than 90 percent of the productive capacity for basic industrial chemicals in the United States. CMA member companies and the communities in which they operate are among the thousands of facilities and communities that must respond to Title III.

CMA SUPPORTS FULL IMPLEMENTATION OF SARA

Last year, CMA testified before your subcommittee about the chemical industry's efforts to comply with Title III. At that time, we described many CMA projects in progress to assist our member companies in responding to the letter and spirit of Title III. Today, we are pleased to highlight some of the results of these efforts, as well as some of our future plans.

CMA and its member companies are leaders in the implementation of Title III. Our objectives are to make the law work at the local level and to encourage full compliance by our member companies. We have undertaken several programs and initiatives to achieve these objectives.

CMA believes that there is a high level of compliance with all aspects of Title III by our member companies. During the course of our educational and other outreach activities, we encountered some members

of the public, media and other covered industries who were unaware of the breadth of Title III. As the members of this subcommittee are well aware, Title III is not and was not intended to cover only the chemical industry. For example, the chemical industry is only one of twenty manufacturing categories required to submit annual release data. Furthermore, with the expansion of the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard to companies outside the manufacturing sector, the reach of Title III Sections 311 and 312 now extends to thousands of additional facilities.

For the chemical industry, compliance efforts required by Section 313 are in addition to those already required under other federal, state and local laws and regulations. These laws and their implementing regulations protect human health and the environment by limiting releases by controlling the source of the air emissions, by reducing pollutants in wastewater, by managing and treating hazardous wastes, and by regulating the production, distribution and use of chemical substances in commerce.

CMA IS COMMITTED TO WORK WITH THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), STATE AND LOCAL AGENCIES, AND COMMUNITIES TO PROMOTE EFFECTIVE IMPLEMENTATION OF TITLE III

CMA continues to work with EPA, state affiliate chemical organizations and our member companies to inform our employees, neighbors and our customers about the requirements of Title III, to provide assistance to others in complying with the law, and to communicate about our release data and our actions concerning it.

Under the Title III program, we have developed numerous resource materials, primarily in the form of compliance manuals and workshops to provide technical support to educate and assist our members.

In addition to CMA's efforts, our members have conducted numerous training courses and seminars to educate their employees, their customers, and the public about Title III. Many of these sessions were co-sponsored by other companies, CMA and other trade and professional associations, EPA and state agencies. CMA members developed and distributed training manuals, newsletters, other literature, computer software, informational posters, and provided hotlines and consulting services, among other compliance assistance vehicles. Some companies established corporate compliance teams. These teams conducted employee training, reviewed completed forms, and conducted compliance assessments to assist facilities, particularly smaller companies, to assure the quality of reported data.

Among Title III's objectives are to prepare communities to respond to emergencies and to give more information to the public about the chemicals that are used in their communities. To achieve these objectives, it is necessary to go beyond the law's requirements in order to help manage the large volume of information, to help put the release data in proper perspective and to help the public understand what the information means to them. The chemical industry committed significant resources to accomplish these objectives.

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CMA's activities extend beyond assistance to CMA members and reach to our customers, the public, and to Local Emergency Planning Committees (LEPCs). CMA member companies -- individually, and under the umbrella of state chemical industry organizations -- are assisting LEPCs in emergency response planning and training, and are providing emergency response equipment. Many CMA member companies are providing volunteers and other assistance to support LEPCs, such as making computers available to assist in managing Title III information, providing financial support, and equipment. We found that the vast majority of LEPCs are in need of such support and are receptive to industry assistance.

For instance, one company has contributed all administrative support to an LEPC, such as typing, copying and postage. The company also donates access to its corporate print shop to help publish the LEPC newsletter. In New Jersey, Hoechst Celanese Corporation and CIBA-GEIGY Corporation together contributed a $45,000 computer and software package to the town of Summit and Overlook Hospital to coordinate information and communication under Title III so that medical access to technical data are improved.

TITLE III PROVIDES OPPORTUNITIES FOR BETTER COMMUNICATION

The chemical industry's Community Awareness and Emergency Response (CAER) program ushered in a change in the way the industry interacts with the community. The passage of Title III extended and formalized that process. By requiring manufacturing industries to report data on releases, Title III Section 313 provides an opportunity for a dialogue between facilities and the public. As an extension of their CAER

program activities, many CMA members discussed their Section 313 data, what it means and what the company was doing to respond to inquiries about the data from the neighbors.

A major CMA objective has been the dissemination of information on risk communication -- how to present information in meaningful ways so that citizens can evaluate actual risks in their community and take appropriate action. CMA sponsored a project involving leading academic scholars in the field of risk communication. Together, with industry representatives, they produced a manual containing risk communication guidelines on how to explain risk-related information and present risk comparisons. CMA also co-sponsored with EPA an educational seminar for independent scientists to inform them about Title III's requirements and implications.

CMA published a workbook designed to help plant managers communicate Title III information to their communities, and a brochure to help explain the law and the responsibilities of industry, government and the public. Accompanying videos were produced and workshops held. CMA assisted EPA by distributing more than 7,000 copies of EPA's "Explaining Environmental Risk," as well as numerous copies of the Agency's Section 313 brochures.

One example of company outreach activities is demonstrated by the Monsanto Company. Monsanto developed a broad-based community relations program to help the public understand the new law, and to disclose directly the company's emissions data to its neighboring communities.

To prepare for implementation of the disclosure phase, specific communications plans were developed for 25 individual sites. Information on key chemicals was produced in layman's language on chemical properties, hazards, health effects and other concerns. Support was provided to other companies and industries; position statements were produced for plants with special concerns; an internal Title III newsletter was published to keep all locations informed of new information; information packets were assembled for briefing members of Congress; and presentations were made to state legislators and regulators, U.S. EPA personnel in Washington and several regional offices, and county health departments.

THE ANNUAL RELEASE DATA CAN HELP SET PRIORITIES

Since our testimony a year ago, the first year of the Section 313 data has been reported. The data both on the national and local level can be a valuable tool in identifying priorities for regulatory review, development and enforcement. The data is also helpful in evaluating trends, although with only one year, and soon two years, of data available, such trend evaluations will be premature.

While the Toxic Release Inventory (TRI) can be of assistance in setting national priorities, its most effective use is at the local level where the TRI can best be used to: identify priorities for review and set strategies for controlling releases of specific substances by the EPA and or the state agencies; focus on companies, regions, or specific chemical processes of concern for further investigation and/or enforcement actions by EPA or the state agencies; assist companies to

identify substances and processes that potentially pose the greatest hazards and set priorities for waste minimization; compare permitted with reported releases to assist in determining compliance with applicable state and/or federal regulations; and assist companies in evaluating the potential impact of plant emissions on a community.

ANY POTENTIAL HEALTH IMPACT FROM CHEMICAL RELEASES MUST BE EVALUATED USING LOCAL CONDITIONS

The TRI data, used alone, should not be used to indicate whether a health risk exists in a community. There is no direct correlation between pounds of releases and their effects on the environment or human health. In fact, such correlation can never be made because the TRI data do not identify exposure potential or duration of exposure or impacts on the community. In the case of air releases, modeling and/or monitoring of release data are necessary before estimating the concentrations of a substance in the community. Only then can health scientists evaluate potential relative risks. Many CMA member companies perform such analyses and share the results with their communities.

Two examples of such regional monitoring projects are the Houston Regional Monitoring (HRM) program and the St. Gabriel parish air monitoring study.

HRM, now completing its eighth year of continuous operation, is a Texas corporation owned by more than 30 of the companies that it serves. It has been successfully operating an ambient air quality monitoring network in the Houston area since 1981. The HRM program includes a

long-term community exposure study for a variety of volatile organic indicator compounds which are indicative of emissions from industrial, mobile and other area sources in the Houston ship channel industrial corridor. A panel of industry health professionals receiving the measurement results determined that the ambient concentrations measured do not suggest a significant health risk to the community.

Ten chemical companies with facilities in the St. Gabriel/Geismar area of Louisiana funded an ambient air monitoring study conducted by Dr. Edward B. Overton, Director of the Institute for Environmental Studies, Louisiana State University (LSU). The study was conducted to determine the ambient air concentrations of volatile organic air pollutants in the St. Gabriel/Geismar industrial area.

The protocol for the study was prepared by Dr. Overton and reviewed by the Air Quality Division of the Louisiana State Department of Environmental Quality. In 1988, a final report was issued by LSU. Among its conclusions were that all chemicals detected were generally in the low parts per billion range. The sources of the chemical included industrial emissions, emissions from gasoline, and auto exhaust.

CMA'S COMMITMENT TO WASTE MINIMIZATION

A principal outcome of the Section 313 data collection process has been to help focus management attention on both identifying opportunities and priorities for pollution prevention or waste reduction. The data has also served to illustrate the multi-media nature of releases.

There are a number of aspects of this practice, including source reduction, waste reduction, recycle, and reuse and treatment to reduce volume or toxicity. We believe that all these reduction practices are important because they each contribute, in a unique and useful way, to the reduction of releases and protection of public health and the environment.

In this spirit, CMA recently filed comments supporting EPA's proposed policy statement on pollution prevention. We believe that it presents a realistic and practical strategy for pollution prevention - the ultimate goal of waste minimization. In this regard, CMA endorsed the Agency's all media approach.

CMA member companies have a long history of reducing waste. Industry applies sound business and economic principles, good engineering practices and common sense, to prevent and minimize waste generation and reduce the potential hazards from those wastes. Waste minimization equals savings in the high cost of managing wastes. Both society and industry benefit when we trim production costs by recycling waste, by using more efficient processes, and by substituting, where feasible, raw materials.

As part of our expanding waste minimization program, CMA recently published a Waste Minimization Resource Manual. This manual is designed to assist chemical manufacturing and other companies in developing and improving waste minimization programs. It discusses the fundamentals of

waste minimization; the applicable laws and regulations which provide a framework for planning, the programmatic elements of waste minimization, and finally, waste minimization technologies.

WASTE MINIMIZATION LEGISLATION

CMA is aware that there are a number of legislative proposals pending at both the federal and state levels, ranging from providing incentives and technical assistance to firms interested in reducing waste to mandatory and unobtainable reduction requirements.

CMA believes workable legislation should follow the public disclosure process begun by Section 313. It should establish qualitative objectives for source reduction and recycling. Comprehensive waste management practices including source reduction, recycling and environmentally sound treatment are all necessary elements for reducing releases to the environment and need to be recognized. Also, it should include reporting requirements that will provide a useful national data base. Other elements of workable legislation are provisions for grants, technical assistance, and an information clearing house. CMA is encouraged that S. 585, the Pollution Prevention Act of 1989, contains many of these concepts. CMA representatives will continue to work with committee staff to clarify and resolve our remaining concerns.

COMPANIES ARE AGGRESSIVELY REDUCING RELEASES

Individual companies are establishing their own waste reduction programs. One example is Union Carbide Corporation's Emission and Waste

Reduction Program. The company's Chemicals and Plastics Group has reduced the annual amount of chemicals released to the air by 17 million pounds (45 percent from the 1985 baseline) and reduced the amount of RCRA hazardous waste generated annually by 96 million pounds (64 percent from the 1982 baseline).

A POLICY TO GUIDE FUTURE EFFORTS

While chemical manufacturers have undertaken such efforts individually for years, CMA's Board of Directors has recently recommended to all its member companies that they adopt a formalized, industry-wide program to reduce releases and waste. This policy and accompanying program which were developed at the Board's request, build upon CMA's existing Air Quality Policy and Waste Minimization Program by extending waste reduction efforts to all environmental media. By implementing this policy, companies will strive for long-term continuous improvement in achieving reductions.

The release reduction policy is designed for implementation by each CMA member company at the plant level using the following process: Using the Section 313 list as a starting point, companies will inventory their releases to all environmental media. Companies will then establish reduction priorities for the inventoried releases based on factors including the potential health and environmental impact and the level of community exposure. Based on this prioritization, companies will formulate a release reduction plan, and periodically communicate their release reduction progress and future plans to employees and the public.

To assist member companies in implementing the policy, to demonstrate industry leadership, and to be responsive to what we belisve are the public's concerns, the Board of Directors approved three program recommendations. These new elements are in addition to existing CMA Title III communications and Section 313 database analysis activities. The three projects are:

- Regional Monitoring and Modeling Projects: This project will provide more information on concentrations of chemicals in the ambient air. This will be accomplished by expanding regional monitoring to additional areas through local industry funding with CMA and local chemical industry leadership, assistance and technical support. Having this information will lead to a more meaningful interpretation of potential health effects and help industry set priorities for reduction efforts.

- Community Health Effects Evaluation Project: Clear and widely accepted scientifically-based methods to identify safe levels for the public's exposure are essential to explain the meaning of Title III releases. This project will develop consensus support for the use of reasonable, scientifically-sound methods in assessing health effects from community exposure to chemical releases, and to improve public acceptability of such measures.

- Assistance to Smaller Companies Project: This project will provide technical assistance to customers and smaller companies to enhance overall environmental, health, and safety programs.

As an integral component of this policy, CMA continues to promote practices that protect the safety and health of our employees and residents of communities in which our members operate. Our industry's goal is to assure that employees, communities, and the environment are not adversely affected by the releases from our operations and to encourage others, including our suppliers and customers, to achieve the same goal. Our commitment to improving our performance is the most important aspect of our industry's response to the goals embodied in Title III.

STATEMENT OF
CHARLES L. ELKINS
DIRECTOR, OFFICE OF TOXIC SUBSTANCES
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON SUPERFUND, OCEANS AND WATER PROTECTION
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

MAY 10, 1989

Mr. Chairman and members of the Subcommittee, I am Charles L. Elkins of the U.S. Environmental Protection Agency. I welcome the opportunity to discuss the significant progress that EPA has made in implementing Section 313 of the Emergency Planning and Community Right-to-Know Act (Act). Almost one full year ago, this same group addressed this Subcommittee with our ideas and plans to implement this important Community-Right-to-Know program. We took with us, your own personal recommendations for a twenty point implementation strategy. One year later, I am confident that we have not only met, but have surpassed our commitment made at that time. Our sights for this coming year are set equally high and we intend to meet the challenges that this program presents with a highly skilled staff, a year of experience behind us, and a strong commitment to the public to ensure their "Right-to-Know" and their ability to make well-reasoned decisions about the environment they live in.

In July of 1988, EPA began to receive the first of more than 74,000 Toxics Release Inventory Reporting Forms. More than 18,000

facilities provided EPA with annual emission estimates for the 300 plus chemicals cited on the Section 313 list. The reports, taken as a whole, make up the first national inventory of toxic chemicals released to all environmental media -- air, water, and soil -- from manufacturing facilities.

While compiling these data has been a major focus of EPA efforts over the past year, we are now beyond issues dealing solely with information collection and have moved forward to the more important tasks of assuring the quality of that data and implementing programs at the federal, state and local levels to assure that the information is used in a constructive fashion. Seven specific points raised in your "20 Point Implementation Plan" speak to these efforts. In particular, I will discuss how EPA's efforts to implement the Toxic Release Inventory (TRI) with regard to the following recommendations:

1. To develop methods to assure quality of TRI data;
2. To develop methods to make TRI data publicly available by data base telecommunications and by alternative means;
3. To develop methods to assist states and local communities with data access;
4. To develop methods to respond to data inquiries;
5. To develop methods to use TRI data for EPA's regulatory programs;
6. To develop emissions inventory noncompliance enforcement procedures;
7. To limit trade secrecy claims.

1. **TRI Data Quality Assurance**

EPA is committed to making the Toxic Release Inventory as accurate as possible. We recognize that the use of the data by the public is highly dependent on their confidence in its accuracy. Quality assurance conducted by EPA took place on two levels. The first level of quality assurance was conducted to verify that the data entered into the national data base accurately reflected the data submitted to EPA. The second level of quality assurance was conducted to verify that data submitted to EPA was valid and represented realistic emission values. In reviewing the reporting forms, EPA has used algorithm checks to locate data entry and submission errors. In some cases, computer generated values were used to enhance the data base by standardizing county names or by adding information such as Federal Information Processing Standards (FIPS) county codes, or latitude and longitude values for each zip code to assist in geographical studies of the data.

Data entry verification, while costly and time consuming is the easier of these efforts. EPA has used considerable staff and contractor time to assure that the information which has been entered into the EPA data base is about 98% accurate. The major focus of our data entry checks has been to verify emission numbers, validate company names, address and public contact and normalize fields which will be critical to the public in terms of data search and retrieval, e.g., zip codes, counties, etc. In total, over 20 different areas were reviewed.

Assurance of the quality of the data itself is a more difficult task, but one which we have been pursuing actively. A review of the forms themselves by our industrial chemistry staff was completed to assure that obvious errors have been identified. We have contacted companies whose emission numbers are questionable and have worked with them to verify or correct their estimates. We also have two data quality activities that involve working with companies to determine how their estimates were derived and to draft guidance for industries where we think estimates are not being correctly calculated. This is an ongoing activity which we will continue to pursue until we are confident that the data being submitted are representative of actual emission numbers.

The results of our data quality efforts for this year include a data base that is searchable by a number of different variables which has normalized the geographic search capability and resulted in a low data entry error rate. For a first year data management system, we believe that we have accomplished a great deal.

2. TRI Data Made Publicly Available by Data Base Telecommunications and by Alternative Means

The Toxic Release Inventory is unique as an environmental data base in that it is designed to provide information to the public as its primary purpose. We have therefore placed great emphasis on learning what the needs of the potential users are and studying how to make the data available to them in an easily accessible manner.

Working with interested groups, EPA has identified a number of different means to make the TRI data available to the public. Since July 1988, EPA has made individual company reports publicly available at the Title III Reporting Center in Washington, D.C., which is also the data processing center. Access to the data is by company name, chemical name, state, or city. To date, over 1,200 requests for the TRI data have been filled. These requests have been from various user audiences including Members of Congress and their staffs.

EPA plans to have the data available on the National Library of Medicine's (NLM) TOXNET system in June of this year. This system will offer user friendly, menu-driven search capabilities. Included in its features will be arithmetic functions for basic aggregation of the data. The system will be able to calculate total releases, maximum/minimum values, and nonreported counts for subsets of the data.

The NLM TRI data base is being tested before it becomes publicly available. We are now, or shortly will be, testing the data base at sites with two separate levels of computer searching expertise, novice and experienced. The test sites represent a geographic mix and belong to one or more of the anticipated user groups identified above. Sites with "experienced" users have users with some degree of training on NLM's TOXNET or a comparable on-line system. "User-friendly" menus designed for novice searchers with little or no computer searching experience are also being

developed and will be tested at a later date.

In addition to providing the TRI data through telecommunications, the Act requires EPA to make the data available through "other means." EPA plans to publish and nationally distribute this spring the 1987 TRI in a number of alternative formats. Computer output microfiche will be distributed to each congressional district via the 1,400 Government Printing Office (GPO) Federal Depository Library program. The GPO distribution will also provide over 100 national sets of data to regional depositories and state libraries. Also, over 3,300 sets of TRI state data will be distributed to non-depository county libraries. These libraries are being selected for EPA on a county-by-county basis by state librarians. Microfiche can be inexpensively, easily, and quickly duplicated by GPO and libraries if additional copies are needed. National sets of TRI microfiche will also be distributed by EPA to the states and internally to the EPA Regional Offices, libraries, and the TRI Reporting Center, to serve the public and the Title III telephone hotlines.

EPA is planning to use for TRI distribution the Compact Disc-Read Only Memory (CD-ROM) system. The CD-ROM distribution is a pilot project of the U.S. Congressional Joint Committee on Printing (JCP) and the GPO to apply optical publishing technology to dissemination of government data. The TRI data on compact discs will be the first of the JCP's projects to be completed. Distribution will be to 400 federal depository libraries. In

addition, EPA plans to prepare 300 discs for distribution to 200 non-depository research and academic libraries, and for internal distribution to EPA Regional Offices, libraries, the TRI Reporting Center, and Title III telephone hotlines.

A third means of information dissemination will be the use of magnetic tape that EPA is making available. Magnetic tape containing the full data base will be available through the National Technical Information Service (NTIS) and GPO at a reasonable cost (less than $500). State subsets of the most frequently requested TRI data also are being prepared on discs (dBase III or Lotus formats) and will be available to the public through the NTIS. Computer tapes of the entire data base will also be available from NTIS and GPO.

EPA is preparing a National Report on the 1987 TRI data to be available later this spring. This report will be a summary and statistical analysis of the reported data and will be available in each congressional district through the 1,400 federal depository libraries. At least 6,000 copies of the report will be produced for additional distribution. The information is organized to highlight geographic, chemical, and industrial patterns of release or transfer. Because this report is also the first in-depth look at the first year of TRI data, it also serves as a guide to what TRI is, and how it can be put to use.

3. **Assist States and Local Communities with the Data Access**

EPA has undertaken a number of activities to assist states in their management and use of the TRI data. EPA is working with a number of states that are interested in obtaining the software used by EPA to enter and maintain the Section 313 data in EPA's mainframe computer. During the fall of 1988, EPA provided training for all EPA Regional Offices and interested state agencies on TRI data base access. EPA is planning additional workshops during the summer and fall of 1989 to help state agencies with the use of the data.

EPA has provided background information to the states in advance of the release of Section 313 data to assist in responding to public requests about state data. EPA has developed fact sheets for most of the Section 313 chemicals and is providing background materials for other chemicals to the public. EPA is developing an electronic mail system for EPA Regional Offices-to-states, and state-to-state transfers regarding TRI data and all Title III information.

EPA will provide the TRI data to the states in magnetic media format, on computer output microfiche, and on CD-ROM disks, as well as allowing access through the National Library of Medicine's TOXNET system. Finally, system documentation is being shared with all states that request it.

4. Development of Methods to Respond to Data Inquiries

EPA has developed capabilities to respond to inquiries about emission data by implementing the Toxics Release Inventory (TRI) Response Network. The Network, consisting of environmental professionals at the state and federal levels of government, has been in place since June 1988.

The Network provides for answers to citizens' questions at the level of government closest to them. Therefore, if local groups have a question regarding a local issue, they can pose questions to state agencies who will be able to answer most questions that arise at the local level. Should the state agencies have difficulty answering a particular question, EPA's Regional Offices, as part of the Network, are available to help state agencies. EPA Regional Offices having difficulty with technical or national questions, may call upon EPA Headquarters media offices. Obviously anyone receiving a question will attempt to respond or refer the question to the appropriate state or federal agency for response.

Additionally, the Chemical Assessment Desk in EPA's Office of Toxic Substances serves as a technical contact for the Regional and Headquarter's staff to integrate technical responses across media offices. EPA envisions that its assistance will then be channeled through the state contact. EPA is also working to ensure that there is appropriate representation on LEPCs and that they have access to information necessary to deal with the long-term health

and environmental risks associated with the routine emissions of toxic chemicals. EPA's Regional Offices also have designated Section 313 contacts to provide assistance.

EPA expects that the NLM TOXNET system will provide a powerful information gathering tool for the public, environmental groups, state and local agencies, researchers, and others. The flexibility of the NLM system in providing health and environmental effects data to the public was one of the significant features leading to EPA's choice of NLM to make the TRI data publicly available through computer telecommunications.

In addition, EPA is developing a Risk Screening Guide which we expect will be used by state and local officials responding to questions about Section 313 data. The Risk Screening Guide is intended to provide guidance to those who will be evaluating Section 313 emissions data for the purpose of making statements about the potential for health and/or ecological effects. This guidance manual suggests steps that can be taken to answer: How one can respond effectively to health and ecological inquiries from the public, and how the releases of greatest potential concern from a public health or environmental standpoint be identified from the thousands of forms submitted so that these critical cases can be further investigated.

In addition, a Section 313 chemical information directory (Road Maps) will be attached to the guidance manual. This directory will serve as a pointer to pertinent Section 313

chemical-specific information including health and ecological effects data, federal and state regulations and standards, and state air and water program contacts.

5. Use of TRI Data for EPA's Regulatory Programs

EPA anticipates that using the TRI data will help states in developing their own chemical risk assessments in their communities and understanding where potential chemicals problems exist in their area. Within EPA, we are investigating ways to apply the data to various media programs. These other media offices operate under various statutory requirements.

All EPA Regional Offices and the majority of the states have been trained to use the internal EPA TRIS. Training has also been provided to the National Enforcement Investigations Center (NEIC). Attendees at ongoing training sessions have come from relevant programs in the regions and states as well as the programs charged with actually implementing Title III. In addition, similar training sessions have been scheduled or are being planned for various EPA programs at Headquarters and EPA's Office of Air Quality Planning and Standards in Research Triangle Park, North Carolina.

During 1988, EPA organized the high-level, cross-media TRI Task Force to address problems and opportunities associated with Agency-wide use of the data collected under Section 313. One of the objectives of the TRI Task Force was to explore different uses for the data collected under Section 313 in the three principal

program offices. The Office of Air Quality Planning and Standards, the Office of Solid Waste, the Office of Water, as well as the Office of Toxic Substances are exploring ways to use the TRI data in aspects of the programs they implement.

There are many uses of the TRI data cited by the other programs that require essentially no new funding and will be useful to their respective programs. TRI data uses include: incorporation of the TRI data into existing review and screening processes; use as a screening tool for finding problem geographic areas, identifying problem regulatory areas, and compliance problems.

EPA has established a Pollution Prevention Office to supplement its activities in this area. Let me assure you that EPA is committed to integrating pollution prevention into the way we do business. EPA's pollution prevention program is designed to help bring about a significant change in the nation's approach to meeting environmental objectives by eliminating or reducing potential pollutants at their source and to encourage environmentally sound recycling of any wastes or emissions that cannot be eliminated.

EPA now has resources directed toward specific prevention-related activities. For example, some program areas such as the alternative fuels and mobile sources activities, the geographic initiatives in the Water Office, and the municipal solid waste initiatives promote prevention-oriented approaches. Ultimately,

our goal is to have a majority of EPA resources devoted to prevention-oriented practices in each program area. EPA is developing a pollution prevention strategy outlining short- and medium-term actions to be undertaken by EPA program and Regional Offices.

EPA will be developing a strategic plan for achieving environmental gains through pollution prevention. EPA will work with industry, the public, environmental groups, the international community, and federal, state, and local governments to identify and implement activities that promote the pollution prevention ethic.

A strategy for pollution prevention data collection is being developed that balances the burden imposed by data collection with the need for the prevention data. The strategy will build on current data collection, particularly TRI.

The TRI data will be valuable to EPA, industry, and the public as we look toward future environmental objectives. The TRI data showed us that the emission values were much higher than expected -- and much of these reported emissions currently are managed under EPA or state regulations. Clearly, preventing these emissions and wastes before they are released is the key to reducing the risks associated with pollution.

TRI provides EPA with a new and enormously powerful means of gathering multimedia data on waste generation and waste reduction in the manufacturing sector. As the data becomes fully available,

EPA will gain a sophisticated capacity for analyzing toxic chemical releases in great detail, including breakdowns of toxic releases by individual chemicals, programmatic groupings (for example, NESHAP air pollutants), and geography.

In addition to waste generation information, TRI also collects explicit information on waste reduction, including pounds (or percentage) reduced from the previous year; production index for each chemical; the type of modification made, and the reason for it. The waste reduction section of the reporting data form is optional (unlike the rest of the form) but provides a useful picture of where activity is taking place.

TRI data will play two roles in fostering waste reduction: as an analytical tool, and in the context of Community Right-to-Know.

EPA is analyzing the data for insights into waste reduction activities. One current project is comparing waste reduction information collected by TRI with that collected under RCRA. The project will clarify gaps that need to be filled if we are to achieve a more complete understanding of waste reduction. In the National Report of TRI data, one section of the report will be devoted to a summary and discussion of the TRI waste reduction data. Many program offices within EPA, Regions, states, and localities are already accessing the TRI data in a wide assortment of uses.

TRI's primary rationale is as a tool for the public at large to better understand toxics in their communities. The broad accessibility of TRI data, and the relative ease of grasping it, will continue to heighten public awareness of toxic releases and create public pressure for companies to institute waste reduction.

The air emissions data reported to the EPA provide rough estimates of the potential magnitude of the release of toxic pollutants to the ambient air. While many of the compounds listed under Section 313 are known to be toxic to humans at certain exposure levels, the data available from the TRI are not sufficient to determine with any certainty the magnitude of the potential public health risks that may be associated with the emissions from a particular source. The data are being used to identify and rank sources and source categories for assessment. EPA's Office of Air and Radiation is integrating these data into its regulatory assessment program for air toxics as well as its programs to control volatile organic compounds (VOC) that are precursors to ozone formation.

The primary use of the TRI data in the air toxics programs is for source identification and source prioritization. The TRI may provide useful data to enhance the control of air toxics.

EPA's Office of Water plans to use the TRI data in a number of diverse activities, including verification of NPDES permits, identifying impaired waters, updating of the ranking of the chemicals of greatest concern to the Water Program and enforcement

targeting. The Office of Water plans to use the TRI data at the beginning of their regulatory activities when reviewing permit requests, in setting water quality standards, and establishing geographical priorities.

EPA's Office of Toxic Substances is using the TRI data for screening candidates for regulatory investigation under its existing chemicals program and verifying production estimates for asbestos and other regulated chemicals.

6. Emissions Inventory Noncompliance Enforcement Procedures

You recommended that EPA gear its enforcement strategy to cover more violations and include emphasis on enforcement against those who submit no emissions forms at all. On July 15, 1988, EPA issued its final Compliance Monitoring Strategy for Section 313. This document emphasizes inspections for potential nonreporters and includes addressing reports with readily detectable errors and data audits.

The compliance program is conducted in the regions by both EPA staff and personnel from the American Association of Retired Persons (AARP). In FY 1989, EPA is assuring compliance with Section 313 by: 1) identifying suspected nonreporters and investigating to determine if they are subject to reporting and taking enforcement action if warranted; and 2) identifying and taking action against a prioritized subset of reporters who have submitted reports with readily determined errors. Since the threshold quantities for meeting the reporting requirement will be

decreasing over the next few years and facilities will be therefore encompassed into the regulated community, EPA will continue to emphasize enforcement against nonreporters. However, as the threshold reductions are completed, the emphasis on investigating the quality of the data in the toxic chemical release reports will be increased.

The Section 313 EPCRA Enforcement Response Policy specifies the appropriate level of action for violations, including penalties of up to $25,000 per day. Nonreporters -- facilities which fail to submit reports prior to enforcement contact -- are subject to the receipt of a civil administrative complaint. The penalties assessed to nonreporters are dependent on the size of the facility as measured by sales or number of employees, the number of unreported chemicals, and the quantities of the unreported chemicals which were manufactured, processed, or used. Facilities that have submitted reports containing readily determined reporting errors involving chemical and facility identifications and missing pages are initially subject to the receipt of a notice of noncompliance with direction to correct the errors and resubmit their form within 30 days. Enforcement will escalate should a company fail to comply with the notice of noncompliance.

EPA has worked closely with the states either directly or through the National Governors Association to improve TRI coordination in all areas. This cooperation has lead to the identification of nonreporters, coordinated inspections for better

resource use, and cross-referral of potential violations. The underlying philosophy behind our enforcement efforts is compliance with the reporting requirements of the law. While the first year of the Section 313 EPCRA compliance effort has not yet expired, a strong and aggressive program has been firmly established nationwide. There is no question that our strategy in this area has returned excellent dividends from a modest investment.

7. Limits to Trade Secrecy Claims

EPA has acted to ensure that trade secret claims are within the bounds of the law. Of the 66 data fields on the reporting form (Form R), only two fields, the chemical name and the Chemical Abstract Registry Service number (a unique standardized number assigned to a chemical), may be claimed as a trade secret. All other information on the form is available to the public. EPA published a final rule for claims made under the Act in July 1988. EPA's regulations require that companies substantiate their secrecy claim at the time of submission. Of the approximately 200 trade secrecy claims initially received, most have been withdrawn or denied following EPA review. For security reasons, we have not allowed trade secret information to be reported on magnetic media to reduce the chance of inadvertent disclosure. Consequently, very little of the TRI data is claimed trade secret, which is consistent with the Congressional intent of making information about chemical releases known to the public.

Various provisions in the Act ensure that the public will receive meaningful health and environmental information about trade secret chemicals. One way to accomplish this is through the generic class or category of the chemical claimed as a trade secret. The generic class or category must be inserted on the public version of the Title III report in place of the withheld trade secret chemical identity. This generic class or category is to be structurally descriptive of the chemical claimed as trade secret. The Act's preamble advises the generic class or category chosen should be one which provides as much information as possible on the release hazards and adverse health effects of trade secret chemicals. EPA has prepared information on adverse health and environmental effects for Section 313 toxic chemicals claimed as trade secret. This information is being made available to the public through the public data base and other means.

CONCLUSION

Mr. Chairman, we are proud of our effort to create the Toxic Release Inventory on the rapid schedule mandated by Congress. Our user surveys indicate that there is considerable interest in the data, but the breadth of the uses to which the public and others will put the data will become known only over time. Certainly, within EPA we are just beginning to recognize the significance of the data across our air, water, and land regulatory programs. We have attempted to make TRI available to the public in a variety of ways including computer telecommunications. It is too early to

judge the success of these public access strategies, but we are optimistic that we have made a good start at a reasonable cost to the federal government.

In summary, we believe that an environmentally informed public will be empowered to encourage pollution prevention and promote risk reduction efforts in local communities. EPA has worked hard to give them that power.

This concludes my formal statement. I will be pleased to answer any questions you may have regarding EPA's implementation of Section 313 of the Act.

WRITTEN STATEMENT

STATEMENT ON BEHALF OF THE AMERICAN PETROLEUM INSTITUTE

THE POLLUTION PREVENTION ACT OF 1989 (S.585)

SUBMITTED TO THE SUBCOMMITTEE ON
SUPERFUND, OCEAN AND WATER PROTECTION
ENVIRONMENT & PUBLIC WORKS COMMITTEE

UNITED STATES SENATE

MAY 10, 1989

I. INTRODUCTION

The American Petroleum Institute (API), a trade association representing over 200 companies engaged in the exploration, production, refining, transportation and marketing of crude oil and petroleum products, appreciates this opportunity to present the industry's views on waste reduction. Our comments will address both policy considerations and program implementation issues which should assist the Subcommittee as it debates the need for additional legislation, such as S.585.

API's suggestions and recommendations are based upon our experiences and the lessons we have learned about effective waste management:

- The petroleum industry actively employs and supports waste reduction practices to reduce both waste volume and toxicity.
- API supports many of the concepts outlined in S.585 which promote waste reduction practices. Since many of these concepts, however, are currently being put into practice by EPA's Office of Pollution Prevention, we do not believe that legislating these practices is warranted.
- Specific measures of progress should not be mandated, but recorded as part of voluntary site-specific management plans, building upon available in-house and regulatory data bases which meet the objectives of the program and which consider the volume and toxicity of wastes.

API supports waste reduction as a primary focus in overall waste management activities. Indeed, our members employ various types of waste reduction practices in normal operations. Industry understands that these efforts are in its own best interest, both from an economic and an environmental protection standpoint. Furthermore, the petroleum industry, as well as other industries, have made significant progress in waste reduction. In the last several years, individual company programs such as SMART (Save Money and Reduce Toxics), PPP (Pollution Prevention Pays), WRAP (Waste Reduction Always Pays) and WOW (Wipe Out Waste)[1] have been adopted to promote and institutionalize waste reduction.

As an integrated industry with upstream operations that rely on extractive processes, we have marshalled technology to maximize production and refinement of crude oil. This inherently reduces wastes. Consistent with the integrated waste management hierarchy approach, we have focused recent efforts to reduce the volume and toxicity of remaining waste streams through a mix of

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[1] Specific programs implemented by Chevron, 3M, Dow and Texaco, respectively.

source reduction, environmentally sound recycling, treatment and secure disposal techniques.

To reduce waste volume and toxicity and protect human health and the environment, API supports the following waste reduction concepts:

- integrated waste management hierarchy which (1) places emphasis on source reduction and recycling, but also recognizes the desirability of appropriate treatment and the necessity of secure disposal and (2) considers the diversity of site-specific industrial and waste management operations;

- multimedia approaches to measuring progress to ensure that wastes are not shifted from one medium to another;

- technology transfer to provide a mechanism for all operations to learn of new technologies for reducing volume and toxicity of wastes, by source reduction and environmentally sound recycling and treatment, both within an industry and across various industries; and

- educational and information dissemination activities to help government, business and the public better understand the concepts of waste management and the opportunities for waste reduction.

Most of these concepts are incorporated into EPA's ongoing activities within its Office of Pollution Prevention (OPP) and we support OPP's role in this effort. Given the establishment of this program and Administrator Reilly's commitment to pollution prevention as a top agency priority, EPA's efforts should be allowed to develop before additional legislative action is considered.[2]

The critical issue is how to measure progress within an integrated waste reduction program. API does not believe that new mandated general reporting requirements are necessary. Furthermore, site-specific concerns require that measurement of waste reduction progress be defined within site-specific management plans. Depending on the facility, progress may be measured by building upon existing internal and regulatory data bases.

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[2] In a speech to the National Press Club April 20, 1988, William Reilly stated, "...We will make pollution prevention a hallmark of environmental efforts. The people of this country, I believe, are ready to participate in this effort. It is an area that demands education more than regulation, and information more than enforcement."

It is neither necessary nor productive to force fit data collected under the Superfund Amendments and Reauthorization Act (SARA) Community Right-To-Know as a measurement of solid waste reduction progress, particularly when waste stream volume is more consistent with RCRA's regulatory framework.

II. API SUPPORTS AN INTEGRATED WASTE MANAGEMENT HIERARCHY AS THE CORNERSTONE FOR WASTE REDUCTION

The Pollution Prevention Act of 1989 (S.585) declares the following to be national policy:

> [T]hat the generation of hazardous substances, pollutants, or contaminants should be reduced or eliminated at the source whenever feasible; hazardous substances, pollutants, or contaminants that are generated should be recycled, in an environmentally safe manner whenever feasible; hazardous substances, pollutants, or contaminants that cannot be reduced or recycled should be treated in an environmentally safe manner; and disposal should be employed only as a last resort and should be conducted in an environmentally safe manner.

This policy statement is also similar to the integrated waste management hierarchy proposed by EPA in the draft report of the Municipal Solid Waste Task Force entitled, "The Solid Waste Dilemma: An Agenda for Action" (See 53 Federal Register 36883, September 22, 1988). API supports the use of an integrated waste management hierarchy because all the "steps" embodied in this hierarchy -- source reduction, environmentally sound recycling, materials and energy recovery, environmentally sound treatment, and contained disposal -- are recognized as necessary to reduce the volume and toxicity of waste. The applicability of each of these steps in the waste management heirarchy will be dictated by the diversity of site-specific industrial and waste management operations as well as the feasibility and cost of the various options available. In addition, feasibility considerations need to include implications for process safety, worker safety, consumer acceptance and product quality, practicability, raw materials availability, and economics.

API is concerned, however, that the application of the entire waste management hierarchy, as described in Section 2, to the subsequent provisions in S. 585 is not considered. For example, Section 4 describes EPA's overall mission to be the implementation of a strategy to promote pollution prevention through source reduction (emphasis added). Section 5 makes

available state technical assistance grants to promote source reduction techniques (emphasis added). Since all elements of the waste management hierarchy should be considered in pollution prevention, API believes that they should be encouraged along with source reduction, as stressed in the overall policy of S.585.

III. CURRENT INCENTIVES PROMOTE VOLUNTARY WASTE REDUCTION PROGRAMS

From the standpoint of economics and limiting liability, industry has substantial incentives to increase efficiency and reduce waste. Increased efficiency in most manufacturing processes will correspond to fewer losses (less waste, fewer emissions, and higher conversion of raw materials). Because all industrial operations must continually increase cost effectiveness to remain competitive and because wastes and emissions represent increasingly significant costs, and potential future liabilities, industry will continue to encourage pollution prevention opportunities simply as a matter of good business. In addition, current regulatory actions under HSWA and CERCLA have placed additional incentives on reducing wastes and are pushing waste management considerations toward more effective use of source reduction, recycling, and treatment aspects of the waste management hierarchy.

IV. PETROLEUM INDUSTRY PRACTICES HAVE ALREADY SUBSTANTIALLY REDUCED WASTES

The petroleum industry supports and encourages voluntary efforts to reduce wastes. In recent years, company efforts such as SMART, WOW and WRAP have been adopted to promote and institutionalize waste minimization efforts. Although each company may adopt a unique style in developing a program, they typically include a number of common features.

For any waste reduction program to be successful, it must have the endorsement of the top management of the corporation. This ensures that appropriate waste reduction policies are instituted, financial priorities are established, and waste reduction is considered in future corporate plans. Programs must also be recognized as evolving. Goals must be established and progress toward those goals evaluated. Periodically, management must evaluate the progress of the program and redirect efforts, if necessary.

Specific elements of a program typically include:
(1) employee education on the value of waste reduction;
(2) preparation of facility-specific waste reduction plans;
(3) establishment of a corporate-level office to oversee the program and evaluate progress; and (4) maintenance of a flexible and voluntary program, recognizing differences in plants and operations.

The petroleum industry employs various types of waste reduction practices in its normal operations. For example, a recently completed CONCAWE (Conservation of Clean Air and Water, Europe) survey of 75 European oil refineries showed that typically only 0.13 percent weight of crude intake was disposed, meaning that more than 99 percent weight of each barrel of crude oil is made into useful product. A 1982 API survey showed similar results for U.S. refineries. Although the impetus here is clearly economic, the benefits derived offer significant environmental improvements.

Petroleum operations are designed to maximize the conversion of hydrocarbons into saleable products. First, at production sites, maximum separation of crude oil from water is achieved through the use of heat and other mechanical separation techniques. Then, at refinery operations, crude oil is subjected to a series of physical, mechanical and chemical processes that are geared to maximizing hydrocarbon conversion to their most usable form.

To maximize hydrocarbon output, the petroleum industry relies on the recovery and recycling of secondary oily materials as input to fuels or to other manufacturing processes. For example, oil from sludges and emulsions typically are recovered by various forms of separation and dewatering; in this process, the oil and water are separated from the solids. To maximize recovery of usable hydrocarbons, the liquid phase is subjected to further separation techniques. Oil that is recovered is recycled to the process, and the water is treated and discharged under permits.

Waste reduction programs, many of which focus on the waste management hierarchy, nevertheless recognize the limits to source reduction efforts for our industry. In fact, EPA, in its 1986 study of waste minimization, rated the potential of the petroleum industry lowest based on constraints that impact source reduction opportunities. The extractive nature of upstream operations, combined with the process improvements that have been developed over time, limits further opportunities for waste reduction.

Notwithstanding source reduction constraints, industry's efforts have led to very successful results in waste reduction. Last year a number of petroleum companies advised EPA of their waste minimization programs and progress. One company reported that its solid waste production was reduced by about 45,000 tons annually over a two year period. Another company noted that at one refinery, its waste minimization program has reduced waste generation by 70 percent over the last five years, which translates into about 50,000 tons of waste that has not been generated. A third company reported that in a three year period, the amount of hazardous waste disposed of was reduced by over 40 percent; the use of hazardous waste landfills and impoundments was reduced by about 30 percent; and the number of commercial disposal sites used by the company declined by over 20 percent.

These examples are but a few that demonstrate the industry's commitment to the reduction of waste generation. The programs put into place several years ago have shown consistent results in minimizing both the volumes and toxicity of waste. A further example of the petroleum industry's commitment to waste reduction is illustrated through the research and development funds allotted through the Petroleum Environmental Research Forum (PERF) on specific catalysts and emulsion formation research. And as the technology for waste minimization is refined further, the petroleum industry will continue to contribute to the practice of sound waste management.

To expedite the transfer of industry-developed technology, API is preparing a compendium of waste management practices for use by member companies. We will also conduct a survey the marketing and refining industry sectors to determine the amount and types of waste generated and how that waste is managed.

V. NEW MANDATED GENERAL REPORTING REQUIREMENTS ARE NOT NECESSARY

Section 7 of S.585 proposes using the SARA Section 313 list of chemicals as a basis for measuring waste reduction progress for individual facilities. Specifically, the bill would require that annual toxic chemical source reduction and recycling reports be submitted for each chemical required to be reported in the annual release form under Section 313 of SARA.

API does not believe that any new mandated general reporting requirements are necessary or workable. Many voluntary waste reduction programs already include program-specific measures of progress. Our experience with the programs demonstrate that an effective waste reduction measurement scheme must: (1) address specifically the objectives of a waste reduction program, (2) consider the diverse nature of operations and facilities within an individual industry, (3) build upon existing waste reduction data bases and (4) consider the need for multi-media measurement.

Thus, while API does not oppose the collection of Section 313 Toxic Release Inventory data for Community Right-To-Know purposes, API strongly opposes its use for monitoring solid waste reduction progress. First, this data base was designed by Congress -- not through regulation. Second, the Section 313 list was derived by simply combining lists of chemicals developed by two states. Third, the data include both regulated releases under air, water, and RCRA permits and best-guess estimates of fugitive air emissions (calculated using methodologies that are yet to be validated). The reporting thresholds established in Section 313 were set arbitrarily. Plainly, these data can not provide a reliable baseline for assessing solid waste reduction.

In its original context, Section 313 placed special emphasis on air and water emissions, which are currently typically monitored on a constituent basis. While the use of SARA 313 may be appropriate for tracking progress in reducing air and water emissions of specific constituents, such constituent reporting does not conform to the complex mixtures or the manner in which solid waste streams are typically tracked, managed, and regulated in the petroleum industry.

For example, solid waste reduction decisions in the petroleum industry are based upon waste streams and their volumes. This is consistent with the framework of RCRA, which controls solid waste management based upon the origin and toxicity of waste generated. An examination of petroleum industry waste streams reveals process-specific wastes. Petroleum operations do not typically generate streams of pure phenol or isolated impoundments of sodium sulfate. In a refinery for instance, waste streams would be categorized as separator sludge, dissolved air flotation (DAF) float, tank bottoms, and biological sludge, all of which contain a vast array of different constituents. In fact, RCRA regulations are specific to these waste streams.

Effective measurement schemes should reflect the unique nature of an industry, as well as the site-specific aspects of each facility. The nature of the petroleum industry and the fixed nature of its raw materials influence the type of measurement which is feasible and appropriate. Section 313 listed chemicals are not very relevant to crude oil and its direct products. Crude oils vary in composition, and each represents a very complex mixture of thousands of individual chemical constituents. The complexity of the substances and the limitations of existing chemical analysis techniques make attempts to identify and track individual chemical constituents through the refining process virtually impossible. Instead, overall qualities of the major process streams such as specific gravity, boiling point, aromatics, and paraffins are used. Attempts to develop even an estimate of the concentrations of specific constituents -- many of which are trace constituents -- in all streams entering, produced or consumed in, or leaving the refinery as a product or waste would yield data which would be difficult to aggregate in any fashion that would demonstrate waste reduction progress.

Data derived from SARA Section 313 would likely not be sensitive enough to detect real changes in solid waste reduction practices. Consequently, it may appear that little progress is being made. In comparison, reporting solid waste generation and disposal on a stream basis should better reflect actual progress in pollution prevention. Therefore, API supports the inclusion of the Waste Stream Survey in S. 585. The survey is to be implemented by EPA and will collect information describing volumes of waste resulting from all elements of the waste managment hierarchy, namely, source reduction, recycling, treatment, and disposal. After several years of collecting such

information, these data, along with the SARA 313 reporting requirements, are to be analyzed by EPA for their applicability to tracking waste reduction. Prior to developing a new reporting mechanism, EPA should use existing reporting mechanisms, such as the RCRA biennial reports, to obtain such information.

We further believe that a general efficiency standard is neither an appropriate nor a workable measure for all of industry. How efficiency should be measured and what opportunities for efficiency gains assessed will vary widely from industry to industry and facility to facility.

The following factors illustrate why any generic reporting measurement approach will be ineffective where activities are so highly dependent on site specificity and product/process mix.

- Product mix: Some refineries produce a minimum number of products such as gasoline, jet fuel, diesel, and fuel oil, while other refineries also produce asphalt, lubricants, solvents, and chemical products. Refineries with a minimum number of products may have only distillation and sweetening processes with possible catalytic reforming. The larger more complex refineries may also have catalytic cracking, hydrocracking, coking, hydrodesulfuration, alkylation, other fuels processes, asphalt oxidation, solvent and catalytic dewaxing and/or steam cracking, along with other specialties and chemical processes.

- Geographical location: Refineries located in arid regions tend to use air coolers, while those located in coastal regions and on rivers tend to utilize water cooling with attendant cooling towers.

- Refinery age: While newer facilities may have segregated process and storm water sewers, older refineries tend to have a single commingled process and storm water sewer system.

There are many variables that influence the volume and nature of waste generated. Thus, development of indexing procedures need to remain flexible, such as those currently stated in S.585, to accommodate these factors.

Currently, API's member companies rely on internal audits and existing record keeping systems, such as the biennial reports under RCRA and the air and water permit compliance data to monitor their progress. In the future, solid waste information

will be augmented by standardized survey information collected by API. Starting this year, API will be collecting and reporting data on the volume of waste generated by the marketing and refining sectors of the industry as well as information on how that waste is handled.

There already are available reporting requirements under each of the media specific programs for coordinating multi-media monitoring. Most of these reporting requirements are ongoing and thus, offer the possibility of some trend analysis. The existing data serve as a basis for tracking progress and obviate the need for any new, reporting regime.

Prior to legislating any new reporting requirements, API suggests a review of progress through alternate measures, such as waste stream volume. Data collected over a two to three year period could be analyzed to determine the appropriateness of the reporting requirements. EPA could collect the data and report back to Congress its recommendations for measuring waste reduction progress before any additional requirements are mandated.

VI. API RECOGNIZES THAT GOVERNMENT HAS A VITAL ROLE TO PLAY IN ENCOURAGING WASTE REDUCTION EFFORTS

As Dr. Joel Hirshhorn of the Office of Technology Assessment recommended to Congress in 1986,

> the way to promote a preventive environmental strategy is through education, information transfer, on-site or in-plant technical assistance to industry, removal of the regulatory obstacles to waste reduction, support of research, rewards for outstanding waste reduction, and government leadership based on long term institutional commitment and adequate resources.

API supports government facilitation of waste minimization by promoting multi-media approaches, encouraging the transfer of technology for all aspects of the integrated waste management hierarchy, tracking progress on waste minimization and eliminating regulatory barriers. Many of these same concepts are proposed in S.585. No new legislation is needed to implement these concepts, however, because they are already being addressed by EPA's Office of Pollution Prevention. For example, EPA has been working in a cooperative spirit with various industries in its efforts to establish a clearinghouse for information exchange. API supports this more broad-based multi-media approach to information transfer that may contain source reduction as well as recycling and treatment techniques.

Although only recently established, we have already begun to see developments from EPA's Office of Pollution Prevention. Specifically, that office has proposed and received public comment on its policy statement -- essentially another version of the waste management hierarchy embraced by S.585. OPP's efforts should be allowed to develop more extensively before additional legislative action is considered.

VII. NON-REGULATORY MECHANISMS CAN PROMOTE WASTE REDUCTION

API believes that the state grants program and information dissemination concepts proposed in S.585, when expanded to include all aspects of integrated waste management, will promote technology transfer among industry groups. Our support for such activities is demonstrated by the fact that API is already working with EPA on a series of waste minimization workshops and is preparing a compendium of the full range of waste reduction practices that will serve as a means of transferring pollution prevention technical information within the industry.

VIII. SUMMARY

In summary, industry supports waste reduction efforts and their implementation in the context of the integrated waste management hierarchy. Current economic and regulatory incentives are sufficient to encourage industry to continue to increase efficiency and reduce waste volume or toxicity to the degree feasible -- given industry and site-specific constraints. Industry continues to explore and implement waste reduction and efficiency techniques.

The petroleum industry supports the role of government -- specifically the Office of Pollution Prevention -- in facilitating waste reduction by promoting multi-media approaches, encouraging technology transfer, tracking progress on waste reduction and coordinating the state grants program.

With regard to measuring progress, new mandated general reporting requirements are neither necessary nor workable. Furthermore, any measure of progress should address the objectives of the reduction program, consider feasibility and effectiveness, and address site specific concerns. It should also build upon existing, appropriate data bases and address all media.

MANUFACTURING CREATES AMERICA'S STRENGTH

COMMENTS
OF THE
NATIONAL ASSOCIATION OF MANUFACTURERS

ON THE
IMPLEMENTATION OF THE EMERGENCY PLANNING AND
COMMUNITY RIGHT-TO-KNOW ACT OF 1986

SUBCOMMITTEE ON SUPERFUND AND ENVIRONMENTAL OVERSIGHT

MAY 10, 1989

U.S. SENATE

SUBMITTED FOR THE DOCKET
JUNE 2, 1989

National Association of Manufacturers
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EXECUTIVE SUMMARY

The National Association of Manufacturers (NAM) appreciates this opportunity to provide written comment on the implementation of Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA). NAM has reviewed the opinions expressed by the panelists. While the opinions expressed by all were valid, NAM regrets that little was made to identify the problems of SARA Title III as encountered by small and medium size companies. The nation's great mass of impacted companies is indeed small and medium size, and many of these companies have little or no experience with environmental regulations or forms such as Form R.

NAM believes Title III will be a more workable program if the following changes are made:

1) Improve education/outreach activities of the Environmental Protection Agency (EPA) for small and medium size companies especially around reporting time;
2) Provide flexibility to EPA for reasonable enforcement action against small companies showing good faith compliance efforts on emissions reporting given the outreach problems, inadequate hotlines, and lack of technical guidance documents;
3) Increase reprinting and distribution of guidance documents for SARA Title III;
4) Provide regional and local EPA workshops and seminars on SARA Title III compliance;
5) Expand EPA hotline capabilities;
6) Make SARA Title III lists of chemicals easier to understand with various requirements;
7) Enhance coordination within various offices between EPA, Local Emergency Planning Committees (LEPC) and State Emergency Response Committees (SERC);
8) Address liability issue for LEPCs and SERCs;
9) Improve data management capabilities; and
10) Improve training at all levels of SARA Title III.

It is the intent of these comments to identify problem areas and to establish an ongoing communication with Congress and EPA in order to improve implementation of SARA Title III. In addition, it is to emphasize that one of the results of SARA Title III's Section 313 reporting requirements has been to make companies more inclined to engage in voluntary waste minimization efforts.

It is the position of NAM that waste minimization is the preferred option for the management of industrial hazardous wastes and that federal and state regulatory programs should encourage the development of flexible and complementary approaches, including where practicable: source reduction; onsite or offsite recovery and reuse; treatment to reduce the toxicity, volume, or mobility of substances; and incineration. Widespread voluntary industry initiatives to minimize waste have been undertaken. There is need for a simple, uniform system of reporting which recognizes previous progress attained by innovative firms and which is capable of accurately assessing further efforts.

In order to inform manufacturers of ways to curtail waste generation and to prevent the release of pollutants into the environment, NAM co-authored with ENSR Consulting and Engineering a publication titled, "Waste Minimization: Manufacturers' Strategies for Success." NAM has submitted a copy of this book for the record and respectfully requests its inclusion in the hearing record. Also for inclusion in the record, NAM would like to submit its guidance manual for plant managers of small- and medium-sized companies, "Preparing for Emergency Planning."

COMMENTS
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The National Association of Manufacturers (NAM) believes that Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA) will come to be a workable program. However, there are many formidable obstacles to correct before SARA Title III will be a truly effective program. Due to the Environmental Protection Agency's (EPA) on-line data bank, the public is expected by June 1989 to have access to chemical use information. It is only regrettable that these disclosure and reporting activities coupled with the emergency planning activities seem to do little to address "the public's right to understand" the beneficial and safe uses of chemicals in the manufacturing process. NAM believes that the limited success in the general manufacturing community of SARA Title III is really due to the statute's unrealistic deadlines and to the lack of adequate funding for EPA programs.

To this end, NAM fully supports the use of the Community Awareness and Emergency Response (CAER) Program established by the Chemical Manufacturers Association. Additionally, NAM will continue to work with EPA to disseminate SARA Title III compliance and guidance documents to its member companies. To complement the CAER and EPA materials, NAM published "Preparing for Emergency Planning," a guidance manual designed for the plant manager of small and medium size companies. In addition, NAM co-authored with ENSR Consulting and Engineering, "Waste Minimization: Manufacturers' Strategies for Success," a publication designed to inform manufacturers of ways to curtail waste generation and to prevent the release of pollutants into the environment.

These comments will offer suggestions on how to improve the program and will provide a brief overview of how NAM supports voluntary waste minimization efforts to induce pollution prevention. They are also offered in hopes of establishing an ongoing communication with Congress and EPA in order to improve the implementation of SARA Title III.

On April 21 1988, NAM's Solid and Hazardous Waste Task Force held a SARA Title III "oversight" discussion which centered on problem areas. We believe these problem areas still exist and include:

- o Information overload;
- o Confusion over the lists/too many lists;
- o Information management problems;
- o Lack of training;
- o Liability concerns for LEPCs and SERCs;
- o Lack of coordination within EPA's Office of Solid Waste and Emergency Response (OSWER), Office of Pesticides and Toxic Substances (OPTS), and the "outreach" offices such as External Affairs and Office of Small Business Ombudsman;
- o Unrealistic deadlines (established by Congress and imposed on EPA);
- o Material Safety Data Sheets (MSDS) forms shouldn't be submitted to all fire stations, SERCs and LEPCs unless entities can manage the information;
- o Better coordination between EPA, SERCs and LEPCs;
- o Confusion by many smaller companies who use the trade name or common name instead of the proper chemical name on form;
- o Make delisting process easier if EPA makes "clear finding" of no adverse impacts;
- o Nonstandardized MSDS are problematic for fire departments, etc.; and
- o The need for EPA to identify its enforcement policy.

Special concerns for companies with 20-500 employees:

Last year prior to the July 1, 1988, deadline, NAM received over 1000 calls from small companies who had no clear understanding of their potential role under SARA Title III. These companies have bitterly complained of the following:

- o Disproportionate impact vis-a-vis cost, manpower, loss of production, etc.;
- o Confusion in regard to multilevel reporting; bewilderment to many small companies due to overlapping lists--increasing the likelihood of mistakes;
- o Difficulty in determining latitude and longitude;
- o EPA's inadequate estimate of time required to fill out Form R; (Companies have had to hire consulting engineers and reduce production to complete this project. Some small companies spent several hundred hours preparing the emissions data for Form R.)
- o Impossibility to get through in 1988 to the EPA hotline; (EPA concedes that they get over 300 calls a day and cannot expand lines due to OMB regulations and lack of trained staff.) and

NOTE: NAM has requested expansion of the EPA's SARA hotline. (Please refer to the copy of April 1989 letter to EPA Administrator William K. Reilly.)

- o Entirely different answers to techical questions by EPA staff at the national (1-800-535-0202) hotline than EPA staff dealing with Section 313 at the regional EPA offices.

Outreach/Education:

NAM Activities:
In 1988, NAM and 13 other associations held six joint Title III compliance workshops in cooperation with EPA in 1987. These workshops had over 3,000 attendees. "Profits" from the meeting were given to the National Governors Association (NGA) to provide for their meeting for LEPCs and SERCs in Washington, DC.

In 1988, NAM mailed monthly reminders to thousands of companies for four months. NAM's "Briefing" (weekly circulation 24,000) carried five stories on SARA, three of which specifically covered Form R. Additionally, NAM sent 8,000 direct mail letters to small companies in SIC codes 20-39.

NAM member companies have been encouraged to cover the costs for outreach/educational and organizational meetings for the SERCs and LEPCs. Many of the larger companies have held such programs throughout the country. In 1988 and 1989, one larger consumer goods company spent approximately one million dollars on reporting and community outreach. This company undertook an extensive community outreach program involving the company's employees, neighbors, customers, and neighboring companies. The company estimated that they committed 36,000 man-hours at approximately $40.00-65.00 an hour from the corporate engineering staff alone. Another company reported that Form R required "eight man-years" to complete.

The Michigan Manufacturers Association, which is affiliated with NAM through the National Industrial Council (NIC), planned nine Title III compliance workshops utilizing retired engineers from Dow Corporation's SERV Program. However, these workshops were 60-90 days behind schedule because ICF, the EPA contractor for national training, failed to train EPA personnel until late May 1988. NAM held two workshops in two cities with 40 attendees. In 1989, NAM will cosponsor five EPA workshops on waste minimization.

NAM Recommendations for a Better Implementation of SARA Title III:

1. NAM supports flexibility to EPA for reasonable enforcement action against small companies showing good faith compliance efforts on emissions reporting given the outreach problems, inadequate hotlines, and lack of technical guidance documents.

2. NAM encourages the reprinting and adequate distribution of the following EPA guidance documents:

   A. "Toxic Chemical Release Inventory Reporting Form R and Instructions" (EPA 560/4-88-005);
   B. "Title III List of Lists" (unavailable according to SARA 313 hotline);
   C. "Estimating Releases and Waste Treatment Efficiencies for the Toxic Chemical Release Inventory Form" (out of print in 1988 for almost four weeks. Available through GPO for $11.00 by check only);
   D. "Questions and Answers" publication; and
   E. "Industry Specific Technical Guidance Documents" (18 industry sectors data provided).

3. NAM recommends the continuation of compliance workshops with the assistance of industry groups such as NAM, the National Federation of Independent Business (NFIB), and the U.S. Chamber of Commerce, etc.

   EPA should consider mailing more widely to small companies by using Dun and Bradstreet numbers, SIC codes, manufacturers, directories, and other identification methods. To EPA's credit, the statute's unrealistic timeframes and lack of funds for training have hindered EPA's coordination and outreach activities.

However, NAM cannot o[illegible]he EPA's failure to fully educate the great mass of industry which ha[illegible] been fully apprised of the law. The resulting emissions reporting errors (in Form R) will merely be placed in the data bank and skew the data. Without better outreach, the 1989 emissions data may be of little value to the public in terms of accuracy or equity.

It is for this reason NAM would prefer that many Title III programmatic decisions be made by rule making rather than by Congress. It is unfortunate that Congress continues to give EPA little flexibility in implementing SARA Title III.

4. In regard to data management, NAM acknowledges that EPA promises to have the data available through its database by the end of June 1989. However, such data is clearly not understandable to the lay person. The early EPA projections estimated errors at 90 percent. The data should be free of errors and must be double checked by EPA.

   NAM is concerned with the availability of a database with potentially inaccurate information. In addition, pending legislation (H.R. 1457, Rep. Howard Wolpe, D-MI-3, and S. 585, Sen. Frank Lautenberg, D-NJ) in the 101st Congress might perpetuate the SARA III database problems and data problems in other programs under other statutes. Again, the problems exist in the accuracy of actual emissions data and voluntary waste minimization reporting which might become mandatory under pending legislation.

5. In the area of risk management, it can be successfully undertaken only by making clear and understandable the risk and dose/exposure information for the general public. In the view of NAM, EPA has the authority to make useful application of health effects information. As with all scientific data, the materials should be peer reviewed. The materials should be made available and should be understandable to citizens with little scientific background. A failure to coordinate such information could result in further confusion.

NAM acknowledges that the SARA Title III program has caused many companies to more closely examine their emissions of SARA Section 313 compounds. In addition, the reporting requirements have encouraged companies to institute process controls and to improve maintenance to reduce these emissions.

According to EPA, 75 percent of the manufacturing sector complied with the SARA Title III requirements. However, EPA remains in the process of determining the size of the manufacturing "universe" subject to compliance. In addition, EPA believes that lowering the threshold requirements will bring more companies into compliance. NAM believes that thousands of small companies which were covered by the July 1, 1988, emissions reporting requirement had no knowledge of the SARA Title III requirements. More EPA action is needed in the areas of outreach and education in order to allow the companies to meet the annual deadline of July 1.

One of the positive results of the SARA Title III Section 313 program is that NAM supports the concept of waste minimization and believes that all waste generators should be encouraged to develop or adopt practices that reduce the volume and toxicity of wastes, to the extent practical. Indeed, industry has a history of recovery and recycling of materials for reprocessing under the Resource Conservation and Recovery Act (RCRA).

It is the position of NAM that waste minimization is the preferred option for the management of industrial hazardous wastes and that federal and state regulatory programs should encourage the development of flexible and complementary management approaches, including where practicable: source reduction; onsite or offsite recovery and reuse; treatment to reduce the toxicity, volume, or mobility of substances; and incineration. Widespread voluntary industry initiatives to minimize waste have been undertaken. There is need for a simple, uniform system of reporting which recognizes previous progress attained by innovative firms and which is capable of accurately assessing further efforts.

Waste minimization programs were created in many petroleum and chemical facilities prior to RCRA. The impetus for these programs was a commitment to environmental quality in addition to economic considerations and long-term liability concerns.

Most waste minimization programs are under the direction of a corporate level committee which develops and directs the waste policies, establishes the financial priorities, and assures that waste minimization considerations are incorporated into future process designs. These programs have been very successful in reducing the amounts of wastes generated and serve as the basis for further waste minimization developments. NAM supports a corporate-wide voluntary waste minimization commitment.

NAM believes that many incentives already exist to stimulate industry to develop waste minimization programs and technology. However, NAM supports the following financial offsets to be provided to industry by the government to prevent pollution: accelerated amortization, without loss of investment credit, up to and including the immediate write off of the facility at the option of the taxpayer--complications in the present five-year amortization provision should be simplified; state and local tax exemptions; and continued tax-exempt status for income from industrial revenue bonds to finance pollution control facilities.

Yet, the focus remains on the issue of data. Without the availability of an adequate data base upon which to base prescriptive waste minimization goals, NAM recognizes that it is premature to set one efficiency standard for several manufacturing and industrial classes. Some waste minimization reporting requirements appear to be redundant with those of other environmental statutes. In addition, NAM questions the feasibility and practicality of continuous monitoring requirements.

Improvements in laws should be based on a good understanding of what is feasible and reasonably achievable. Increased stringency for stringency's sake is not beneficial to any affected party.

Waste minimization policies should be flexible so that they may allow for maximum cooperation between EPA and industry as the state of the art is further refined. NAM would be pleased, following a review of the specifics, to provide additional comments on the Pollution Prevention Act of 1989, S. 585, introduced during the 101st Congress by Senate Superfund Subcommittee Chairman Frank Lautenberg.

NAM appreciates this opportunity to provide detailed comments addressing the problem areas of SARA Title III and the benefits of existing voluntary waste minimization programs undertaken by many companies. NAM feels compelled to identify the shortcomings of the SARA Title III program given the impact on the thousands of small manufacturers which have received a disproportionate regulatory responsibility. NAM remains available to further discuss the program and solutions in the future with Congress or officials at the U.S. Environmental Protection Agency.

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May 10, 1989

Honorable Frank Lautenberg,
Chairman
Senate Subcommittee on Superfund,
Ocean and Water Protection
U.S. Senate
Washington, D.C. 20510

Dear Senator Lautenberg,

The New Jersey Public Interest Research Group (PIRG), through its national office U.S. PIRG, hereby submits the enclosed documents to be entered into the record of the hearing held today concerning the Toxics Release Inventory, Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986.

With the Toxics Release Inventory data becoming available for the first time, citizens are beginning to have a clearer picture of the extent of toxic emissions into the environment. Although the data are incomplete and rely exclusively on industry estimates, they support two initial conclusions: (1) industries using toxics are discharging significant amounts of pollutants into the environment, and (2) once waste is generated it is extraordinarily difficult to control its ultimate fate in the environment, whether that be in the air, the water, or in our own bodies.

Three of the studies submitted with this letter are New Jersey PIRG's analyses of toxic chemical emissions in three New Jersey counties. They contain recommendations for Toxics Use Reduction legislation similar to that now pending in the New Jersey state legislature. The studies are:

1. TOXICS IN BERGEN COUNTY: An Inventory of Toxic Chemical Releases in Bergen County, September 28, 1988.

U.S. PIRG 215 Pennsylvania Avenue, S.E. Washington, D.C. 20003 (202) 546-9707

2. MIDDLESEX COUNTY: HAZARDOUS TO YOUR HEALTH? An Inventory of Toxic Chemical Releases In Middlesex County, February 8,1989.

3. COUNTY AT RISK: Toxic Emissions and Contamination In Gloucester County, April 26, 1989.

Also submitted with this letter is a study by our sister organization, Massachusetts PIRG, entitled TOXIC POLLUTION IN MASSACHUSETTS. The report is an industry by industry analysis of chemical releases and opportunities for reduced toxic chemical use. This study provides a better understanding of the types of companies that directly release the toxics and how some of them are tackling the problem at its source by reducing the use of chemicals.

The final enclosure is a Toxics Use Reduction policy paper prepared by PIRG Toxics Action, the PIRGs' national technical resource center. This document explains the theoretical and technical basis for the Toxics Use Reduction proposals being advocated by PIRGs in state legislatures across the country, including New Jersey.

Thank you for the opportunity to include the PIRGs' work in this area as part of the hearing record.

Sincerely,

Bill Walsh

Bill Walsh
U.S. PIRG

NOTE: With the exception of the policy paper referred to above, the attachments have been retained in committee files.

TOXICS USE REDUCTION

FROM POLLUTION CONTROL TO POLLUTION PREVENTION

Policy Paper

February, 1989

PIRG TOXICS ACTION

29 Temple Place, Boston,MA 02111 (617)292-4800

THE NATIONAL TOXICS CAMPAIGN

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INTRODUCTION

In response to the public outcry over increasing pollution, numerous environmental laws were enacted in the 1970's. Federal laws included the Clean Air Act (1970), the Clean Water Act (1972), the Safe Drinking Water Act (1974), the Resource Recovery and Conservation Act (1976), the Toxic Substances Control Act (1976) and the Occupational Safety and Health Act (1970).

These laws set restrictions on the release of toxic pollutants into the nation's air, land, water and workplaces. During the 1980's they have been updated and complemented by federal and state Superfund laws mandating the cleanup of sites where dangerous toxins have accumulated.

Altogether, the Congressional Office of Technology Assessment estimates that $70 billion is spent annually by industry and government to comply with this seemingly substantial body of environmental protection laws. (1)

Yet, **this regulatory scheme is not enough.** Consider the following:

- According to a recent study by the Center for Responsive Law, **19% of all water systems tested nationwide have shown some level of toxic contamination**. (2)
- **Toxic compounds are detectable in the body tissue of most, if not all, Americans**. Recent tests by EPA's National Human Adipose Survey show that probably all Americans have toxic compounds stored in their fatty tissues; in fact, 100% of the samples in one recent test contained styrene, xylene isomers, 1,4-dichlorobenzene and ethylphenol. Some of these chemicals are known or suspected to cause cancer, birth defects and other health problems. (3)
- Of more than **59,000 chemicals** used in the workplace nationwide, the Occupational Safety and Health Administration has developed safety standards for only 23. (4)
- Literally **billions of pounds of toxic compounds are emitted without restriction into the air Americans breathe each year**. These toxic emissions result in thousands of cases of cancer annually, acute illness, and chronic respiratory problems. A 1985 EPA study of just 45 substances concluded that these chemicals cause up to 1700 cancer cases in the U.S. each year. Currently, only seven toxic air pollutants are regulated. (5)
- A recent government assessment estimates that more than **560 million tons of industrial toxic wastes are produced annually in the United States**. That's more than two tons of hazardous waste produced for every U.S. citizen each year. (6)

WHAT WENT WRONG?

With all of the existing laws, why are people across the nation exposed to toxic risks on a daily basis? To understand this problem, consider the history of chemical production and use since World War II. In 1940, the entire U.S. economy produced less than 1 million tons of synthetic organic chemicals. By 1950, annual production had jumped tenfold to 10 million tons, and it continued to increase until, by 1987, 125 million metric tons of synthetic organics were produced. The fact is that chemical use has increased so quickly that the laws are still trying to catch up.

Synthetic Organic Chemicals Production, United States, 1945-1987

Another contributing factor is that the existing body of environmental laws suffer from a number of inherent weaknesses that seriously limit their effectiveness in providing full protection. These weaknesses are:

1. ***A misplaced focus on the end of the pipeline:*** Instead of directly ensuring reduction in the use of toxics, present laws focus on controlling wastes already produced, implicitly sanctioning toxics use.

2. ***Missed economic opportunities:*** Instead of spurring industrial innovation, these laws encourage investment in costly pollution control technologies which increase production costs, often without effectively destroying or neutralizing toxins.

3. ***Lack of coordination between laws:*** Each of the existing laws focuses on only one environmental medium (air, water, land, or workplace); as a result, regulators charged with enforcing the laws suffer from "tunnel vision" and fail to grasp the total picture promoting waste and noncompliance.

4. ***Regulatory asymmetry and the "toxics shell game":*** Besides being media-specific, various environmental and workplace protection laws set different allowable limits on releases of different sets of substances. Consequently, firms often can legally shift their waste streams between environmental media to come into compliance with narrowly written laws, rather than actually reducing their output of waste.

5. Data gaps: Current laws do not provide the information that public officials need to identify the greatest risks to workers, communities and the environment. Such information is critical to the establishment of priorities for effective environmental action.

Given these regulatory limitations and greatly increased chemical use it is not suprising that present laws and the pollution control methods they sanction do not achieve a satisfactory level of environmental protection.*

TOXICS USE REDUCTION: A NEW STRATEGY BASED ON PREVENTION

What must be done? We believe the answer is to complement the existing legal and regulatory scheme with a much more positive, proactive system designed specifically to prevent toxic exposures.

The best way to do this is through "toxics use reduction." We define toxics use reduction to be:

> ***changes in production processes, products or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or the generation of hazardous byproducts per unit of production, so as to reduce overall risks to the health of workers, consumers or the environment without shifting risks between workers, consumers or parts of the environment.***

Toxics use reduction can be achieved through any of the following five methods:

1. Substituting toxic chemicals used in production processes: Industry can change the raw materials that it uses, substituting non-toxic or less toxic substances for highly toxic ones. For instance, Cleo Wrap, the world's largest producer of gift wrapping paper, converted from organic solvent-based inks to water-based inks in all of its operations, preventing the release of close to 300,000 pounds of hazardous waste per year. (7)

2. Changing the end product: This involves a firm changing the design of a product in such a way that its production becomes less toxics- intensive. For instance, 3M changed one product in order to use a nonhazardous organic material instead of a metal alloy in its manufacture, thus eliminating a waste stream bearing cadmium. (8)

3. Modifying or modernizing the production line: This involves making fundamental process changes by replacing production equipment and technologies. For example, Hill Air Force Base in Ogden, Utah altered its method of stripping paint from aircraft by replacing chemical solvents with sandblasting equipment. The sandblasting technique utilizes plastic beads which scrape off the paint and then are separated from the paint dust and reused. This prevents the introduction of toxics into the chemical waste stream, and moreover reduces the exposure of workers to the hazardous solvents. (9)

4. Better Housekeeping: By improved monitoring, industry can more precisely identify production of costly and poisonous waste and plug up the toxics "leaks" they discover. This is often the simplest and most rudimentary form of toxics use reduction. For example, Exxon Chemical installed floating roofs over tanks of volatile organics, thereby reducing evaporative losses of valuable products and reducing a hazardous waste stream into the atmosphere. (10)

5. Recycling materials within production processes: Firms can reduce waste streams while recovering valuable materials by creating closed loops within processes that recycle certain substances. This type of recycling is distinguished from out-of-process recycling, which may reduce toxics use but may also create such additional risks as worker exposure and transportation hazards. For this reason, in-process recycling is preferable, and subsequently is the only type of recycling considered to be a true method of toxics use reduction.

TOXICS USE REDUCTION vs. WASTE REDUCTION

A cursory look at the available literature, especially the Congressional Office of Technology Assessment's report, *Serious Reduction of Hazardous Waste*, may lead one to think that toxics use reduction, as defined here, is nearly identical to another preventive strategy, hazardous waste reduction (or, as it is sometimes called, source reduction). (11) While it is true that the list of five methods by which each is properly achieved is the same, there is a subtle, yet very important difference between the two strategies.

Waste or source reduction is a strategy designed to reduce the amount of waste generated by a firm. As such, **it is not explicitly a strategy to reduce all of the hazards** associated with toxics use, including transportation accidents, worker exposure and consumer exposure.

For example, **a firm can properly practice waste reduction by simply incorporating toxic constituents into the product itself.** For instance, Monsanto reformulated an industrial adhesive so that hazardous wastes remained in the product, thus eliminating its own waste stream; (12) however, the net effect of this strategy was to make the product itself more toxic to the consumer, as well as to the solid (garbage) waste stream after being discarded by the consumer. Although this method fits the definition of waste reduction, it did not constitute toxics use reduction, because Monsanto continued to use the same amount of the hazardous substance as it had before. It simply ended up somewhere else. **Thus, waste reduction, though a positive step in the direction of real prevention is not a comprehensive toxics prevention strategy.**

Fortunately, experience has shown that many, if not most, waste reduction steps taken by industry also constitute toxics use reduction. Advocates for toxics use reduction support waste reduction but believe that the best way to reduce waste is by using toxics use reduction methods. As noted, these methods are a slightly more narrowly defined subset of all waste reduction methods.

UNIQUE BENEFITS OF TOXICS USE REDUCTION

By definition, toxics use reduction embodies a comprehensive preventive approach, which would produce several socially desirable outcomes by reducing all exposures to toxics, including:

- reducing the numbers of accidents and spills experienced in transporting and storing toxic chemicals and waste;
- reducing routine and accidental occupational exposures to toxic materials;
- reducing the amount of hazardous waste that contaminates our air, water and land, thus reducing the damage to our natural ecosystems and food chains;
- reducing reliance on costly, nonproductive pollution control systems and on the required number of hazardous waste treatment, storage and disposal facilities;
- reducing the creation of new Superfund sites that require lengthy and costly cleanups;
- reducing consumer exposures to toxics-laden products;
- reducing the amount of household hazardous waste from discarded consumer products which find their way into municipal garbage streams.

The benefits of toxics use reduction are not restricted to the environment and human health. Toxics use reduction can also result in **long-term economic benefits**. Simply stated, it is often cheaper not to produce toxic hazards in the first place than it is to deal with the toxics and their associated health effects after they have spread out into the environment. As the age-old adage goes, "an ounce of prevention is worth a pound of cure." To the extent that a firm uses less toxics, it will incur fewer environmental costs. For example:

- Riker Laboratories in California is **saving $15,000 annually** since they **replaced an organic solvent** with a water-based solvent for coating medicine tablets. In addition, Riker realized a one-time **savings of $180,000** in pollution control equipment that was deemed unnecessary once the switch to the water-based solvent dramatically reduced air pollution emissions. (13)
- Chevron USA is using a high-pressure, **closed loop, hot water cleaning system** that replaced a cleaning system that used toxic chemicals. This has resulted in a **$50,000 annual savings** in waste management costs. (14)
- The Borden Chemical Company installed **new filter rinsing and tank cleaning procedures** that reduced the discharge of organic solvents into the wastewater stream. This has resulted in an annual **reduction in their disposal costs by $48,000**. (15)

In light of the benefits described, why don't more companies engage in toxics use reduction? The primary reason is that implementation of toxics use reduction would involve a fundamental restructuring of the present pollution control environmental protection system. The preoccupation with pollution 'control' has resulted in a low level of education and awareness about preventive strategies. In addition, companies presently do not have much of the information about their own industrial processes that they need to plan and implement toxics use reduction strategies.

Unless some government action is taken industry will not move quickly from the present mindset of pollution control. The federal government has in the past made some token attempts to set national priorities straight. For instance, in 1976, Congress passed the Toxic Substances Control Act (TSCA), granting the EPA broad powers to gather information on a wide range of chemicals, limit or ban their production and use, and require manufacturers to clearly mark their hazards. EPA has not taken this law very far in developing and implementing preventive strategies. In its first seven years, EPA issued regulations for only four substances under TSCA. (16)

In 1984, Congress made another attempt to design a national pollution prevention strategy when it declared that:

> ***"It is to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible."*** (17)

Unfortunately, this sweeping policy statement has never effectively been implemented. Instead, for quite some time EPA promoted the concept of "waste minimization," and left it to the business community to define the term as they choose. Businesses have tended to consider "waste minimization" to be any reduction in RCRA-defined wastes going to landfills, and have promoted incineration as a preferred minimization method.

HOW STATES SHOULD PROMOTE TOXICS USE REDUCTION

In the absence of strong federal efforts to institute a national toxics use reduction program, it is imperative that states take the lead. We propose the following model state program to induce businesses and government agencies to take a serious look at toxics use reduction and to provide needed educational and financial tools they require to realize reductions.

The strength of the proposed program lies in its **comprehensive, integrated approach.** It relies on a number of closely intertwined elements which would work together to promote widespread toxics use reduction. Some elements represent "sticks," or requirements that businesses must adhere to, and some represent "carrots," or benefits that businesses receive. Other elements would realign and refocus government efforts to promote toxics use reduction and would expand enforcement and oversight roles for both public officials and private citizens. The elements are as follows:

1. REPORTING AND PLANNING REQUIREMENTS

Under our proposal, a state would require the largest users of toxics to report, for each production process used, the type, amount and ultimate destinations of toxic substances used. They would also be required to formulate plans for reducing the amount of toxics they use. These

requirements would induce businesses to become aware of the potential benefits of toxics use reduction methods.

2. EDUCATION, TECHNICAL AND FINANCIAL ASSISTANCE

One of the largest obstacles to toxics use reduction is a lack of awareness on how to plan for and implement use reduction techniques. To help alleviate this problem, a Toxics Use Reduction Institute would be established to: develop a much-needed clearinghouse of use reduction methodology; train and certify Toxics Use Reduction Planners who will review the required plans; conduct research; and provide technical assistance. Also under our proposal, a state program would be established to offer an extensive technical assistance program for users of toxics, to offer them working capital in the form of loans, and to promote insurance rates that reward toxics use reduction.

3. STRONGER AND MORE COORDINATED ENFORCEMENT OF LAWS

Our proposed toxics use reduction program would provide state government with a brand new focus that makes toxics use reduction a first priority in dealing with toxics use and waste generation. State agencies would initiate a "cross-media" (air, water, land, workplace) approach to regulation and set up inspection procedures that for the first time would take toxics releases into all environmental media into account. In addition, where toxics inspectors find violations, they would be required to encourage toxics use reduction as a solution.

4. PHASE-OUT OF CERTAIN TOXICS

A program would also be established to gradually phase-out the use of particularly dangerous toxic chemicals. An example is the recent international agreement to decrease the use of ozone layer-destroying chloroflourocarbons (CFCs). This phase-out program would accomplish the twin goals of eliminating the use of dangerous chemicals while giving industry time to develop innovative substitute chemicals, processes, and products.

5. CITIZEN INVOLVEMENT

To augment the various states' government activities, citizens, residents and workers would have access to the required chemical use data and toxics use reduction plans, except those portions for which firms have applied for and been granted trade secret status. Citizens would also be able to request public hearings to discuss use reduction plans, inspect toxics users' facilities, petition to have substances considered for phase-outs, and sue to enforce any state's environmental laws. Their involvement would complement government oversight. It also would encourage businesses to become better "corporate citizens" by demonstrating to their communities that their operations do not or will not present unacceptable short-term or long-term hazards. Such citizen empowerment would serve to "democratize" the use of toxics, since workers and people in communities, as well as consumers, would have more influence over corporate decisions that affect their health and well-being.

6. TOXICS USE TAX

In order to ensure ongoing financing for a statewide toxics use reduction program, a small tax would be levied on the first sale or use of toxics in the state. The rate of taxation for a substance will depend upon its relative toxicity.

CONCLUSION

The time has come to stop accepting the ever-increasing use of toxic chemicals by industry across America. We need to break out of the constraints of the pollution control mindset and move forward into a post- chemical age of clean and efficient technologies. To continue on the present course is to invite not only environmental, but also economic disaster. As Michael Royston pointed out in his book, Making Pollution Prevention Pay, the words "ecology" and "economy" are both derived from the same ancient Greek root, oikos; the former means "to study our house," while the latter means "to manage our house." (18) Toxics use reduction is the means by which we can act positively to combine economics with ecology, thus moving a few steps closer to achieving a truly stable, healthy society.

FOOTNOTES

1. U.S. Congress, Office of Technology Assessment, Serious Reduction of Hazardous Waste: For Pollution Prevention and Industrial Efficiency, OTA- ITE- 317 (Washington, D.C.: U.S. Government Printing Office, September 16, 1986), p.3.

2. Center For Study Of Responsive Law, Troubled Water On Tap, January, 1988, p. i.

3. John S. Stanley, "Broad Scan Analysis of the FY82 National Human Adipose Tissue Survey Specimens: Volume I - Executive Summary. " Prepared for the Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, D.C., (EPA-560/5-86-035) December 31, 1986.

4. Carolyn Marshall, "An Excuse for Workplace Hazard," The Nation, April 25, 1987.

5. U.S. Environmental Protection Agency, The Air Toxics Problem in the United States, May, 1985.

6. U.S. Congress, Office of Technology Assessment, From Pollution To Prevention, OTA-ITE-347 (Washington, D.C.: U.S. Government Printing Office, June, 1987), p.186.

7. OTA, Serious Reduction of Hazardous Waste, p. 82

8. Ibid., p. 83.

9. Ibid., p. 80

10. Ibid., p. 81

11. Ibid., p. 9

12. David Sarokin, et al., Cutting Chemical Wastes (New York: INFORM, 1985), p. 89.

13. Institute For Local Self-Reliance, Proven Profits From Pollution Prevention, (Washington, D.C., 1986) p. 82.

14. Ibid., p. 221.

15. Sarokin, Cutting Chemical Wastes, p. 183.

16. OTA, Serious Reduction of Hazardous Waste, p. 181.

17. U.S. Congress, Resource Conservation and Recovery Act (RCRA) through the Hazardous and Solid Waste Amendments (Public Law 98-616, November 8, 1984).

18. Michael Royston, Pollution Prevention Pays, (New York: Pergamon Press, 1979), p. xi.

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